



FRIDAY, MAY 7, 1880.

## The Argument for State Railroad Ownership.

[Document submitted to Parliament by the Prussian Government with a bill to authorize the acquisition of several private railroads by the State.]

(Translated for the Railroad Gazette.)

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## II.

## ADVANTAGES OF A SINGLE ADMINISTRATION OF ALL THE RAILROADS OF THE COUNTRY WITH REGARD TO CONSTRUCTION.

## (a.) DISADVANTAGES OF COMPETITION IN BUILDING.

The advantages of complete unity in the management and operation of an extended railroad system controlling traffic territory enclosed within state lines, compared with the economical disadvantages resulting from the piecemeal direction of different managements strung together without system, are so considerable that they not only outweigh the highly lauded but supposititious advantages of competition, but, in the end, cannot be dispensed with without serious economical injury to the country concerned.

This question we can now leave, to discuss the enormous waste of the national wealth which is caused by the competitive construction of different railroads in the same traffic district. As soon as the system of leading railroads in the interior can be regarded as pretty nearly complete, such capital as may be invested in the construction of superfluous roads may be regarded as lost, without taking into account sums that may in the future be thrown away on the construction of unnecessary competing lines. Although it is hardly possible to estimate the amount of money thus wasted, still the loss and the waste of national wealth thus occasioned must not be underrated. Many and extensive lines, numerous and costly structures (bridges, stations, etc.) have been constructed at an expense of hundreds of millions [of marks], solely to insure the independent development of already-established enterprises, or in order to exercise competition, or to meet competition that may have arisen. Although we cannot regard all these works as absolutely unproductive, they nevertheless entail a deplorable waste of the national wealth, as the money expended on them has been withdrawn from other and more useful public enterprises.

With these direct losses, entailed by competitive railroad construction, these evil consequences are by no means at an end. The hasty and precipitate competition of the different railroads has contributed not a little to the over-production from which our commerce and industry still suffer, and may long be subject to. Innumerable industries are to a great extent dependent on railroad construction and operation, so that over-production in this department naturally recoils on the manufacturing interests. This precipitation, the hurried competitive construction, the excessive production of railroad supplies, have disarranged the standard by which the normal development of railroads is judged, and have given rise to the extension of investments and operation in all industries connected with the construction and operation of railroads far beyond their requirements. It would not be unjust to attribute to this senseless competition in building during the period of original construction a good share of the blame for the present business depression, a depression which would have affected the national industries still more severely, if the government had not stepped in, and with the means acquired by a fortuitous train of circumstances, began to build considerable additions to the state railroads, and thus infused new life into the almost prostrate industries.

It would be far from safe to accept the theory that the disadvantages accompanying competitive construction are no longer to be apprehended as soon as the construction of the main lines is regarded as finished for all conceivable time. The question of the activity of a railroad in construction is by no means to be considered disposed of when the line is opened for traffic. At this point a new task is begun, namely, to utilize as completely as possible the lines constructed within the territory they include. For this purpose, the connections of sources of traffic situated on either side of the road have to be established and improved. Factories, industrial establishments, coal-pits, mines and quarries of all descriptions are to be connected with the main line by the construction of side-tracks. For transshipments from the cars to vessels and vice versa, side-tracks, terminal facilities at harbors, transshipping arrangements of all kinds are necessary to complete the connections. At such points on the line as may be desirable for receiving traffic, stopping places must be established or new stations built, according to circumstances; with the growing traffic, the arrangement of the depots, the sidings and other structures must be altered and enlarged, and through the country contiguous to the main line local branches must be run to afford a market for the country's produce, and provide means of intercommunication for commercial and growing localities, in short, to arrange the many different contrivances which tend to stimulate local business and develop the full value to the railroad of the district through which it runs. The expenditure that occurs for building purposes of this description, after the road has been apparently fairly opened, absorbs a considerable and proportionately large share of the total capital devoted to construction. It will readily be seen how competition can cause an enormous waste of capital in this respect, where in industrial districts like those of the Upper Silesian and Rhenish-Westphalian coal fields, it determines the policy of construction of several corporations which are all trying to do the same task. The closer together the competing main lines are, the more intricate are the crossings and re-crossings of their side connections and branches, and the greater the cost of construction. The cost of land is increased immeasurably, and the unavoidable provisions for the safety of working call for a constantly increased expenditure. Costly passages of one line over or under the others take the place of level tracks and level crossings of highways and other railroads. The expense of the signal and safety apparatus is also considerable. It is only necessary to glance at the map of the Rhenish-Westphalian coal fields, in which the lines of the three great Rhenish railroads with their hundreds of branches and connections with the pits, mines and industrial establishments cross and recross one another in an apparently inextricable manner, to realize what a squandering of capital has taken place in the construction and operation of such a tangled net-work of roads, the condition of which is due, not to the demands of commerce, but to the competitive tendencies of the projectors. The entry into the coal fields of the Westphalian Railroad, by the continuation of its line from Welver via Dortmund to Oberhausen; would entail for the establishment of connections with the neighboring mines and works a fresh waste of several millions of capital. There remains no doubt that the requirements of traffic might have

been provided for by the outlay of a fraction of the capital expended in construction, if a well planned, connected single system had taken the place of the competitive constructions undertaken in consequence of the conflicting interests of the different constructors. With the creation of new works and the construction of new branches and connections, this expenditure of capital uselessly employed and lost to the country will be increased, and likewise the working expenses must increase continually by reason of the greater complication and number of the lines.

## (b.) WITH REGARD TO OPERATION—DISADVANTAGES OF A DIVIDED AND COMPETITIVE MANAGEMENT—OF THE DIRECTORS, NUMBER OF OFFICIALS AND BUSINESS TRANSACTIONS.

The loss to the nation in consequence of the useless squandering of building funds in competitive construction is thrown into the shade by the daily increasing disadvantages that constantly result from the independent management and operation of the different roads from the want of a systematic connection of the several railroad districts. We have here to do, not with a single loss which might be lived down in the course of time, but with a constant increase of working expenditures that keeps down the income from railroads, and with a continuous annoyance to the public.

In Prussia we find in the year 1877 50 independent railroad managements, in addition to which there were 45 supervisory councils of joint-stock companies, controlling collectively 17,948 kilometers, (about 11,150 miles) of railroad in operation, giving each management an average of about 359 kilometers (223 miles). If we consider only the roads under independent private management, we find 39 managements with a total length of 9,648 kilometers (6,000 miles), or an average of 247 kilometers (153 miles) each, and among them we have no less than 12 companies operating less than 100 kilometers (62 miles) of railroad. Not one of these roads forms in itself a complete system with an exclusive, independent traffic territory; but the different lines rather run in motley confusion alongside of or across each other.

It stands to reason that such a multiplicity of independent administrative machinery, comprising directories and supervisory councils, with their considerable salaries and perquisites, with their central offices and liberal staff, the personnel of which may often be counted by hundreds, (in 1877 there were in Prussia 8,518 officials and operatives with a total income of 16,212,836 marks [\$4,050,000]) employed in the general offices of the Prussian railroads, are the cause of an outlay that might be reduced to a very considerable extent from its present amount, if the roads were under a single organized management. It would indeed be by no means possible to transact all the business now in the hands of different authorities in one place and at the same time; on the contrary, not only could local officials be responsible for direct operation, according to the nature of the business, but the complete centralization of all other administrative business would be avoided as neither useful nor practicable; yet with the number of managements the task of management would be appreciably simplified. With the abolition of the joint-stock companies all the expenses would be avoided that are incurred by the directors on account of general meetings, auditing accounts, fixing of dividends, etc. Far more considerable is the labor demanded in consequence of the reciprocal business intercourse necessarily accompanying a number of independent managements. It is in reality the chief work performed by directories. It can hardly be realized to what an extent the correspondence and consultation necessary for the achievement of this object is carried. The negotiations respecting mutual tariff regulations or similar traffic arrangements, the detailed statements of claims arising in the business of roads associated in "lines," the agreements concerning the use of cars, on management at transfer stations or other common concerns, the time-tables and the conduct of traffic, the disputes of the various competing lines—all these transactions require an expenditure that would be avoided where, as in a single organization, such questions would all be referred to the same authorities.

## TARIFF ARRANGEMENTS.

Prominent among those regulations forming the subject of public complaint, and imposing an amount of extra labor on the management itself that cannot be imagined except by those concerned, we find the number of rates and combinations of rates employed in freight traffic, often arbitrary, complicated, confused and varying. This evil will remain without remedy as long as a number of independent organizations exist, each exercising the right to make all such arrangements on the lines of road it controls. If it is found difficult to effect among the directors a minute agreement, either verbal or by means of correspondence, respecting the principal features of the tariff, which must include not only the tariff proper but also the determination of what the shares of each road shall be in the freight receipts; how much more time, labor and expense must be expended in the execution of such mutual agreements? After the bureau of tariffs has fixed a schedule of rates which is to be published, we have to undergo the waste of time incurred by the tedious calculation at the hands of the accountants as to how much shall be allotted to each road in the combination. Is the schedule luckily published and not perhaps rendered obsolete by new resolutions of the associated roads, we next undergo the adjustment operation, which consists of a minute calculation, undertaken at stated periods, generally monthly, as to how much of the total receipts each road in the combination is entitled to. It is in these tariff and accounting offices that we find a whole army of officials, which with a single administration could not be wholly disbanded, it is true, as it would be required to compute the receipts of the different receiving points, yet could be reduced in number by at least one half. Some idea of the waste of power caused by these computations may be obtained from the following figures: The German railroads possessed in addition to 63 artfully arranged local tariffs, with their various classification, numerous exceptional and special tariffs and clauses, 184 general tariffs for the through traffic interchanged on the German railroads, 351 special rates for particular articles of freight, and in addition 199 general tariffs for international through traffic, with 314 special rates for particular articles of freight. The total receipts of the Prussian railroads from their freight traffic alone in 1877 was 373,419,716 marks (about \$98,354,000); almost two-thirds of this amount, viz., 245,285,834, was from interchanged freight, and only 128,154,072 marks from local freight traffic. In consequence of this complex system of accounts, it not infrequently happens, in spite of the enormous number of employees, that months, often a year, will elapse before the shares of each road in a certain tariff are properly determined. It has even happened repeatedly that a schedule of rates has been out of date for months, before the prospective shares of the roads concerned could be determined.

## TIME TABLES.

Similar inconveniences to those arising in the freight department occur with the passenger traffic of railroads, in consequence of the division and unsystematic arrangement of the different managements.

Here we have a state of affairs that more closely concerns public interests and convenience. We refer to the arrangement of the passenger train schedules. The preparation of

a joint time-table for the main lines of travel and their branches, with suitable connections, forms a semi-annual task of railroad conferences. The time-tables for the next six months are founded on the conclusions reached by these conferences. Such a periodical regulation of the time schedules is the cause of a constantly recurring series of difficult and tedious proceedings, in which, as may be supposed, each road has its particular interest at heart, and is disposed to avoid, as far as possible, any sacrifice of its own to the public interests. In spite of the frequent waste of time, money and labor demanded to achieve a harmonious time-table, the result is often far from satisfying the reasonable desires of the public, so that complaints never cease of insufficient connections, and of the narrow-minded and reckless pursuit of their competitive interests by the different roads. A removal of these disadvantages, and the possibility of arranging a time-table, without delay or difficulty, that shall not be brought by competitive interests into collision with the public welfare, can only be secured by a thorough unity in the management and operation of the railroads.

## ADJUSTMENT OF CLAIMS.

To what extent a proper transaction of business is hindered by the profuse correspondence and red-tapeism consequent upon the existence of a number of small corporations is plainly shown in the adjustment of claims arising from the through traffic of connecting lines. The time occupied in the adjustment of a claim made for a traffic in which several managements are involved is well known to the commercial public by the time they generally have to wait for a settlement. That this delay is not caused in many cases by procrastination is hardly understood, but it is more easily realized when we remember that the settlement requires an agreement of all the roads involved. It must be subjected to a minute test and examination on the part of each road, as far as the object of inquiry relates to the part of the route it controls. That these negotiations, in spite of the contracts existing among the German railroads with respect to the adjustment of such claims, as well as the distribution of the responsibility for damages and lost baggage or freight, in important cases seldom ends in an agreement among the different roads as to each one's share of the responsibility, is readily explained by the many conflicting interests. Often enough a judicial decision is found necessary to bring about a settlement between quarreling managers, which could never happen were the managements undivided.

## TRANSFER STATIONS.

In addition to numerous offices for the adjustment of claims, with their dozens of officials who occupy themselves exclusively with the transaction of such business, the managers require for the possible obviation of such claims a further and not inconsiderable increase in working expenses to provide the arrangements made by each road at its junction with another to secure the proper transfer of all freight and baggage. Even this increased expenditure includes only a portion of this unbusinesslike and totally unnecessary outlay caused by the impractical and unsystematic crossing and entanglement of the roads belonging to different systems. In Prussia alone there are 175 stations where different lines come in contact, and where a transfer of passengers and freight from one road to another takes place. These figures do not include frontier transfer stations, the depots of the Berlin Junction Railroad, and those points where only state railroads come in contact.

At a large number of these transfer points, the working force of each of the different roads (we find frequently three and four, sometimes even five roads running together,) is separate and independent. Often the depots are separate, and, to the great inconvenience of the traveling public, situated at considerable distances one from another. At other depots we find in a common depot building that each road has its separate ticket office, a separate baggage room and often its separate waiting room. Separate freight depots with their special loading apparatus, separate freight houses and freight offices, together with their own switching yards, costly of construction and operation, are found where one of the stations would be fully sufficient to accommodate the traffic. Every road has its own switching service with separate officials, its own reserve locomotive service with its own locomotives, its own car inspectors who at the same time inspect the same cars! It sometimes happens that the managements are constrained to avoid senseless outlay to organize a single cooperative service at one or a few stations for certain branches of the service. If after long negotiations they succeed in arranging an extended and complicated system of general service, it is a source of constant and costly calculation and uncomfortable quarrels. By simplifying this transfer service, almost universally provided with double the required working force, by the establishment of practical working arrangements and by the consolidation and rational distribution of the service, large expenditure may doubtless be avoided, although it is not possible at this period to give the exact figures of the saving that could be effected at the 175 Prussian transfer stations, if the railroad service were under a single management.

## DISPOSITION AND UTILIZATION OF CARS.

The evil consequences of the division of railroad property make themselves felt to a further extent in the lack of a common stock of cars. We find that in addition to owning the road, each corporation has its own cars, and expects to exercise absolute control over their employment for its own private interest. It is true that in accordance with the directions included in Article 44 of the constitution of the German Empire, the transfer of rolling stock from one road to another must be permitted on payment of an agreed price; and an arrangement has been made concerning the reciprocal use of the cars by the so-called "Car Regulations"; but, in consequence of the multiplicity of owners, this does not obviate the necessity for an increased number of officials, and only allows of an incomplete utilization of the cars.

It is evident that the use of the rolling-stock by another corporation could not take place without payment; on the contrary, a certain compensation must be secured to the owners, which compensation, by the "Car Regulations" before mentioned, is made up of a time and mileage rental; the first providing for the loss to the owner during the time the car is withdrawn from his employ, the latter being compensation for the wear of the car, and computed according to the distance the car has run. In order to calculate this car hire satisfactorily to both parties concerned, it is necessary to keep an accurate record of the time and distance the car has run on foreign roads. Accordingly, it is necessary to record the transfer station where the car goes on to the connecting road's track, and the point on that line where the car starts on its return journey, as well as the time of arrival and departure of the car; this is then reported to the accounting department. How considerable this reciprocal use of cars has become may be gathered from the fact that of the 12,333 freight cars owned by the Rhenish Railroad Company in 1878, an average of 2,798 were running daily on other lines, and that the number of Rhenish Railroad cars transferred to other lines, or foreign cars received by the Rhenish Company, was 2,347 daily. With a single operating

\* See the Railroad Gazette, page 198, 1879, "German Regulations for the Interchange of Cars."—TRANSLATOR.



management of all railroads of the country, the noting and reporting of these cars, as well as the occupation of the officials employed in managing this business, and the central accounting department, by which in 1877 for the Prussian railroads alone claims representing 15 millions of marks (\$3,640,000) in car rent were liquidated, could be dispensed with, so that only a few officials would need to be retained for the purpose of securing the proper circulation of the cars through the whole united system. At the same time the expense and delays to traffic due to the fixing of the amount of car damages and the liquidation of the cost of repairing cars, which necessitates the presence in the shops of the several companies of a large number of officials, could be dispensed with.

To what extent the reasonable utilization of the cars is retarded by the multiplicity of owners, and how much the working capacity of the rolling stock is reduced in consequence, may be learned from the following figures: In 1877 the distance traveled by the car axes in their revolutions, on all the Prussian railroads, amounted to 3,681 millions of kilometers (2,286,000,000 miles), during a period corresponding with 2,338 millions of kilometers the cars to which the axes belonged were loaded, and during 1,343 millions of kilometers of revolution they were empty, showing that one-third of the travel was made with empty cars. The united Magdeburg & Halberstadt and Hanover & Altenbeken roads made a still poorer showing; 175 million kilometers of the total distance run by their axes were under full and 103 million kilometers under empty cars.

It is, to a certain extent, an established and hardly changeable condition, that the bulk of the freight in any district moves in only one direction. Coal-fields, in the neighborhood of which we often find an important iron industry springing up, send their products in all directions, but a return freight, in any quantity, for coal-cars is very seldom procured. Large cities receive their supply of live cattle in cars constructed specially for the transport of animals, and hardly capable of use for any other purpose: they must all be returned empty. In the neighborhood of the seaport cities it has been observed that the inequality existing between exports and imports is the cause of the cars running empty one way and full another. The chief cause of the imperfect utilization of freight cars, however, is the restricted use to which they may be put when running out full and returning empty. In busy times, when the roads are haunted by a dread of a lack of cars, each company seeks to secure the return of its cars from others as quickly as possible; while, when the times are dull and rolling stock in excess, they hurry the cars from other companies in and out again in order to save as much as they can on rent.

These considerations have led to the regulation of the reciprocal use of cars within the limits of the German Railroad Union.\* According to directions embodied in Art. 44 of the Imperial Constitution, already referred to, cars, when once loaded, must go direct to their destination, reloading on foreign lines being confined to freight for transportation to stations on the home road, or some station on the route to that road.

The bad effect of these directions, unavoidable under the present state of affairs, is to affect very greatly the utilization of interchanged rolling stock, and its practical application renders it still more hurtful. At such times as the present, when there is plenty of cars, all the companies strive to employ their own cars for transportation over connecting lines, whether others be present or not, in order to earn a small amount in the way of car rent. The station officials, in consequence of the forfeit incurred by delay, are anxious to return every strange car home, whether full or empty, as soon as possible. Not infrequently the managements, for the greatest possible advancement of their own interests, will tranship freight carried over their roads from foreign cars to their own at the first opportunity, returning the foreign car and thus saving rent.

Although the ownership of cars by so many different corporations has very bad effects on the transportation system, they may not be very apparent to the public at a period when cars are plentiful. But so soon as from any cause a scarcity of available cars sets in, the disadvantage at once becomes prominent; for the restricted utility and working capacity of the cars, and the many useless empty journeys, considerably increase the evils of a dearth of cars, and they are further aggravated by the strict rules, accompanied by numerous penalties, which the companies generally apply rigorously at such times. With the institution of one consolidated stock of cars for the largest possible traffic district, the distribution and circulation of the cars could always be arranged according to current requirements, so that each car, on arrival at its destination, would be promptly dispatched in any direction with whatever freight might be on hand; journeys empty would thereby be avoided, and with an undivided direction of the railroad district the supply of means of transport could be adjusted to the demand. That such an end cannot be attained with the present divided management and the various and competing interests of the numerous independent corporations, and that it can only be achieved by uniting the ownership, operation and administration of the railroads under one authority, is evident.

With the united management of the car stock a saving in working material would also be effected. The better utilization of the cars would render a reduction of their number possible, and, by avoiding so many empty trips, we reduce the locomotive power required to do the same amount of transportation. The original cost of the 6,818 locomotives and 143,060 freight cars in use on the Prussian railroads in 1877 was, respectively, 349,134,739 marks and 439,680,134 marks; total, 788,794,873 marks (four marks are about equal to one dollar). An important reduction in the number of cars and locomotives required would, if not at once, in course of the period in which the stock has to be renewed, set free a considerable amount of the total capital, that might be employed for other industrial purposes, and relieve the operative management of the railroad of some of the interest payable.

We have thus demonstrated, that as well in the construction and equipment as in the different branches of management, the existence of many independent railroad organizations in one and the same commercial district must result in a considerable increase in the cost of transportation, which can only be obviated by union and amalgamation into one dominant system.

#### TWO ROADS TO DO THE WORK OF ONE.

The most obnoxious form in which commercial extravagance caused by divided ownership of railroads appears is in the competition of several roads; that is to say, where the traffic that could be accommodated by one line is divided between two or more.

Among the mines and iron works of the Ruhr coal district, we find that no less than fifty-six establishments have complete and independent side-track connections with two roads, and there are twelve that connect with three different roads, although either of them, if properly managed, would suffice for the whole traffic of the works. The capital city, Berlin, has at least duplicate railroad communication with almost every commercial centre in Germany: with the five hundred miles distant industrial district of Rhenish Westphalia it is united by three fully equipped and independent railroad lines. On two of these lines there are daily

three fast through trains, starting at the same minute each day, and arranged and furnished as through passenger trains. The passenger and also the freight traffic between these points might, in ordinary times, be accommodated easily by any one of the roads. In fact, there is scarcely a place of any commercial importance in Germany but is served by two or more competing corporations, although the traffic does not nearly require them. This duplication of the means of communication, without any other reason than competition, and devoid of any good effect on the transport service, is the cause of such an enormous expenditure that the interests of the roads themselves demand a different arrangement. After the opening for business of the many different enterprises that owe their origin to the financial activity following the two successful wars of 1866 and 1870, while at first and during the steady increase of traffic the traffic management was dictated by reckless and unsystematic competition, latterly for the purpose of regulating competition the so-called "apportionment system" has been largely introduced, which consists in a mutual agreement among the different roads, by which the traffic is divided among them for certain fixed periods. Without considering the endless and disagreeable quarrels among the different roads that are inseparable from the system, this method is not calculated to reduce the increase of expenses that is caused by competition.

#### ALTERNATIVE OPERATION.

The division of traffic between the different roads is generally effected monthly, proof in itself that either road is capable of undertaking alone all the business that may exist at that point. This method of apportionment entails on each road the necessity of being fully prepared, on the frequent recurrence of a certain period, to conduct the whole of the transportation. The necessary motive power, the brakemen, trackmen and station hands on full time, and often at increased rates for night service, must be kept constantly ready, although they may perhaps be employed half, perhaps even one-third of the time. A reduction of the force of the road to the strength requisite for the local traffic cannot be thought of, in consequence of the rapid changes that must occur between activity and idleness, and the impracticability of dismissing the superfluous force for the short periods of inactivity. It happens in this wise that the working force of one railroad only out of several connecting lines is fully employed, while the other roads, though fully equipped for service, have no employment for their capacity.

#### CIRCUITOUS TRANSPORTATION.

The apportionment system brings with it a further increase in the cost of transportation, for the reason that the roads entitled by the agreement to share in the traffic are not always those best adapted by circumstances for that duty; that is, they are not always the shortest routes or those over which the traffic may be carried most economically. It is well known that freight is carried over roads exceeding in length by 100 per cent. the shortest route. In making the rates, the shortest route is always made the basis, which is founded in the nature of competition, so that the longer roads which have entered into the contest are compelled to carry at extraordinarily low rates per mile, often hardly covering the bare expenses, without benefiting shippers, to whom the short route is also constantly available. The abolition of this indirect transportation service can only be achieved by permanent amalgamation of the railroads, as it is impossible to prevent, otherwise, competition with the shortest route by other corporations in their own interest.

#### INCREASE OF WORKING EXPENSES AND OF RATES CHARGED.

It is inevitable that the increase in the cost of transportation resulting from the circumstances here detailed must eventually impair the capacity of the Prussian railroads and result in prices for transportation which will be permanently so high as to be eminently unfavorable to traffic. The lower the cost the cheaper the transportation rates; a reduction of rates below the actual cost of carrying cannot be expected permanently from the most reckless competition, because interest in the business ceases as soon as this limit is reached. The waste of power occasioned by return journeys and competition would finally have to be paid for by the shippers in the shape of higher freight rates, while complete unity in the ownership, management and operation of the railroads of the country will result in a gradual reduction of the actual cost, and leave room to hope for cheaper freights.

#### III.

#### GOVERNMENT PROTECTION OF PUBLIC INTERESTS AFFECTED BY RAILROADS.

The public interests which are involved in the location, construction and operation of railroads require the influence of the government for their protection and advancement. But imperfectly recognized at the commencement of railroad development, they were insufficiently provided for almost everywhere. Government confined itself to indirect care, leaving the construction, working and management of the lines to private enterprise, and only limiting the powers of the owners by laws and charters, as the public welfare appeared to demand. In the course of forty years' development, however, the great importance of railroads to commerce and the whole of modern civilization has been manifested, so that the legal regulation of government supervision of railroads has become one of the most important of legislative problems. That an effective regulation and organization of the state supervision of railroads is impossible as a permanency, and that the indirect care of government for the public interests affected is not to be accepted as a solution of the problem of government protection and furtherance of such interests, has not yet become a universal conviction. The regulation of railroads in the various countries still presents a motley picture of the most heterogeneous systems. That among all these systems, the direct and unrestricted control of the government, and the union of proprietary, administrative and operative powers over all leading roads in government hands, form the only effective and practical method of solving the problem, will be manifest on the closer consideration of the important public interests affected by the railroads, and the serious claim the advancement and protection of those interests has upon the government.

The laws protecting and advancing public interests, as far as they are affected by inland railroads, are for the most part contained in the law concerning railroad enterprises, of Nov. 3, 1838, and in the constitution of the Empire. In the railroad law (§ 8, No. 5), the railroads are designated public highways. The exclusive right of carrying on the transportation business over them is given to the constructors only for a limited period, at the expiration of which time others are to be admitted to the business on payment of a stipulated sum (§ 26). On granting the charter for capital stock and the constitution of the company are fixed (§ 1 and § 6). The construction of the road must be according to plans that have been examined and approved by the government inspecting officers (§ 4). The right of eminent domain, for the compulsory acquisition of land, is granted by the state to those who undertake the construction of a railroad (§ 8). With the granting of the charter, the grantees are not merely permitted, but are required, to build and operate the road (§§ 21, 26, 33, 36 and 47). They are bound to keep the road and equipment in a safe and serviceable condition (§ 24). They must carry only on the terms set forth in the published

tariff, and without discrimination among their customers (§§ 25 and 32). The tariff itself is subject to government control (§ 33), and must, under certain circumstances, when required by the government, be suitably reduced (§ 33). The corporation is also bound to undertake certain services for the post-office, and to regulate the working of the road according to certain requirements of the post-office (§ 36). The enterprise is finally under government supervision, and any breaches in the contract undertaken may be punished by a revocation of the charter.

In the imperial constitution we first find the idea expressed that the whole of the German railroads should be considered and managed as one connected network (Art. 42). In consequence, the necessity is fundamentally recognized of common standards for the construction and equipment of railroads, and for uniform regulations of track service and operation, of harmonious time schedules for the passenger traffic, through shipments in both passenger and freight traffic, the transfer of cars from one line to another, and the greatest possible agreement of the schedule rates (Art. 42 to 45). The imperial constitution further declares the interests of the national defense and of commerce in general to be those which should shape railroad legislation and supervision.

In the interests of national defense, the railroads are bound to provide the military authority transportation at uniform reduced rates, and it is made their duty to yield implicit obedience to the authorities of the Empire with regard to the use of the railroads (Art. 47). The necessities of traffic are declared to be sufficient cause for requiring united management of the lines, their provision with equipment, the establishment of the time-tables and the arrangement of the freight trains (Art. 43 to 44).

In the whole of these national and imperial regulations, the controlling considerations for the protection of public interests affected by railroads are prominent.

#### GENERAL VIEW.

Railroads are public highways, the right of transportation over them belonging to the proprietor. The exclusive character of this right is necessitated by its very nature. The endeavor to divide its exercise among several contracting parties, as contemplated in Sec. 27 to 31 of the railroad laws, and to a more considerable extent in the legislation of foreign countries, has proved on the whole practically impossible of execution. The indispensable precautions necessary to insure safety and regularity of working allow of the common use of a road by several operating managements for short distances only, and, where it does not relate to the passage of through trains over short connecting routes, only in consideration of a mutual understanding. While thus the proprietors of the roads have a monopoly of the conduct of transportation over them, not only private traffic but also the state, on account of the mail and military transportation service, must have recourse to these same proprietors.

The importance of railroad transportation for all business interests forbids the abandonment of such important rights to private enterprise, except on conditions which will effectually prevent the exercise of the monopoly to the disadvantage of the public welfare, and will subject the construction, operation and administration of the enterprise, so far as the aforesaid conditions are concerned, to the supervision of the government. From this general point of view results the problem which devolves upon the state respecting the permission to construct, the operation and the transportation service of the railroads.

#### (a) ON THE PART PERFORMED BY GOVERNMENT IN AUTHORIZING RAILROAD ENTERPRISES.

For the establishment of railroads such demands are made on the national wealth that it becomes an indispensable duty of the state to insure its well regulated and useful application. According to information gathered, the capital invested in the different railroads in all the countries in the world amounts to a colossal sum. As well from the comparatively narrow standpoint of national economy, as from the cosmopolitan view of universal economy, the disadvantages of an ill-planned, unsystematic building of railroads are incalculable, as the capital resources of every country are limited, and capital uselessly employed is forever withdrawn from its proper object—the furtherance of economical development. The idea that every railroad, even when not established in a manner to assist economical development in the most suitable form or direction, is useful to the country, is a serious and fatal error that has rendered hundreds of millions of hard earned capital unproductive, that has caused widespread commercial distress, and withdrawn from really meritorious works the means of their accomplishment. The expenditure of such enormous sums as are requisite in railroad construction cannot, therefore, be left to the whims of individuals, although wide latitude may be allowed to the spirit of enterprise and the profitable investment of private capital. It is rather the duty of the government in authorizing railroad undertakings to follow an intelligent, careful and well considered policy, so that the capital of the country shall be expended only where it will prove fruitful, and thus what is useful and necessary be secured at the least sacrifice and without economical waste.

#### THE PROBLEM OF THE STATE WITH REGARD TO THE ACCOMPLISHMENT OF RAILROAD ENTERPRISES.

The successful accomplishment of a railroad undertaking is impossible, unless the projector be empowered, in order to gain possession of the necessary land, to acquire and affect private proprietary rights, and where public interests prove antagonistic, to demand even their limitation to such an extent as may be demanded by the projected structure. The industrial relations of the districts which the railroad divides suffer a disturbing and often in the highest degree injurious change. Enclosed landed property is cut in two, cultivation interrupted and delayed, communications between the two sides of the line by means of public or private roads are broken, transferred, or their utility impaired by the railroad crossings, the water courses are interrupted or removed, the progress of shipping on navigable rivers, as well as the banks of such rivers, are impaired by bridge arches and embankments—in short, every imaginable public interest in the land comes into collision with the construction of the railroad, and as far as may be necessary is compelled to give place to the higher interest involved in the completion of the undertaking. All this but increases the obligation of the state to authorize only those enterprises whose evident utility to the community will justify such an encroachment on the private rights of individuals and industrial interests of small communities. But in order to confine the evils and derangements accompanying railroad construction to as narrow a limit as possible, it is the business of the government to secure the completion of the structure within a proper time and in a proper manner. To achieve these results, the period to be occupied in building must be fixed by the government, and the whole of the plans and the total estimate of the cost subjected to examination and confirmation at the hands of state authorities, and the latter must be empowered to compel the completion and equipment of the road within the time and according to the approved plans. As the fulfillment of the building agreement by the constructor depends mainly on the provision of the necessary material for construction, government must determine the amount of capital required to insure its complete provision and systematic supply.

(TO BE CONTINUED.)



### Retirement of Col. Thos. A. Scott from the Presidency of the Pennsylvania Railroad.

The regular dividend meeting of the Pennsylvania Railroad directors was held yesterday morning, the report of the Finance Committee received and acted upon, and one or two minor matters disposed of, when Col. Scott handed a letter to the Assistant Secretary, Mr. John C. Sims, with the remark: "Gentleman, here is a communication from me which can be acted upon in my absence," and with a pleasant greeting, retired from the directors' room. A few of the older members of the board knew the purport of the communication, but to a majority of the board, the following letter, which was then read by the Secretary, was a genuine and unpleasant surprise:

*Pennsylvania Railroad Company,  
OFFICE OF THE PRESIDENT,  
PHILADELPHIA, May 1, 1880.*

To the Board of Directors of the Pennsylvania Railroad Company:

GENTLEMEN—After a service of nearly thirty years with the company, I find it necessary to tender my resignation as its President, and as one of its directors, to take effect June 1. I do this only because I am assured by my physicians that it is indispensable to a possible restoration of my health that I should be relieved from the cares and responsibilities inseparable from the position. I had hoped to continue in the service of the company during the residue of my life; but, under the advice referred to, this is no longer practicable.

It has not been without much careful thought that I have reached this conclusion as the one best, not only for myself, but for the interests of the company, as I feel that the duties of your chief executive can only be properly performed by one in thorough strong health, and able himself to act promptly and efficiently in all emergencies that may arise. I need not say with what keen regret I sever relations which have extended through nearly two-thirds of my life, and which have associated with them the most gratifying recollections of faithful support and adherence to the interests of the company, on the part of those in every department of the service with whom I have been officially or otherwise connected.

In resigning the trust with which the shareholders and board have honored me, I feel sure that the property will be safely and wisely administered by those who may be my successors. And I can only add that with its present high standard, both physically and financially, a faithful adherence to the conservative policy set forth in your last annual report will, in my judgment, bring about results that cannot but be satisfactory to the management and gratifying to the shareholders. If I can aid at any time to advance such results, it will give me very great pleasure to do so.

I beg leave to return my thanks to each and every member of the Board and to the officers and employees of the company for the earnest and kindly support which I have received from them in the performance of the duties that have devolved upon me.

Very respectfully yours,  
THOMAS A. SCOTT.

After the Secretary had concluded the reading, there was a dead silence for fully two minutes. As one of the directors remarked, "If no one seemed willing to speak, it would have been a relief to have cried." Then Mr. Wistar Morris, the senior director, who had been a member of the board since the incorporation of the company, 24 years ago, rose and, in muffled tones and with shaking voice, moved the reference of the communication to a committee. President Roberts appointed upon the committee the five oldest directors in the board: Messrs. Wistar Morris, Josiah Bacon, who also has been a member of the board from the beginning, Alexander M. Fox, Samuel M. Felton and Henry M. Phillips. They will meet to-morrow and take proper action upon the resignation.

#### COLONEL SCOTT'S LIFE.

Thomas A. Scott was born in Franklin County 56 years ago, and has grown up with the vast corporation from whose control he now retires. Before he was of age he became a clerk in the office of the Collector of Tolls on the State Railroad at Columbia, where he remained until he was transferred to this city; and in 1847, at the age of 23, he became chief clerk, under A. Boyd Cummings, Collector of Tolls at the eastern end of the Pennsylvania Public Works. Three years later, in November, 1850, he entered the service of the Pennsylvania Railroad as General Agent of the Eastern or Mountain Division. Two years after, in July, 1852, he was appointed Assistant Superintendent of the Western Division upon its opening. He was then only 28 years of age, and was not yet 35 when, in January, 1858, upon the retirement of General Lombard, he was appointed General Superintendent of the Pennsylvania Railroad, which had then been organized only two years under its present charter. In April, 1860, he was appointed Vice-President, to succeed the Hon. William B. Foster. When it became necessary to keep open the line of communication between the Capital and the North, he was instinctively pointed out as the man for the place that called for energy, pluck, daring and administrative capacity. Only those who were in Washington in the dark days of the spring and summer of 1861 can understand how much he did to keep the line of communication open, and when later he was appointed Assistant Secretary of War, all his experience and ability were brought to bear upon the solution of the transportation problem, upon which depended not only the success of our arms, but the lives of our soldiers. In June, 1863, when a change in the system of management became necessary, he was appointed First Vice-President, and exactly eleven years after, on June 3, 1874, he was elected President, to succeed J. Edgar Thomson, who had been buried two days before. On the 1st of June next, when he retires, he will have filled the office for six years, during which the duties of the position have been more onerous than ever before.

#### SIX YEARS OF THE PRESIDENCY.

If Colonel Scott could have forecast the six years that were to come when he was placed in the chair of the late J. Edgar Thomson, he might well have hesitated. Eight months only had passed since the failure of Jay Cooke & Co. when the keystone of the monster fabric which had been built upon credit had fallen out, and prostration and insolvency began to loom up ahead of the great corporations of the country. Five years before the Pennsylvania had got its lines to Chicago by the lease of the Pittsburgh & Fort Wayne. The year after it had secured its connection with St. Louis by the incorporation of the Pittsburgh, Cincinnati & St. Louis, with its onerous leases and guarantees, and only three years before the company had stepped into the front rank of American railroads, with its demand for a share of the transmontane traffic by the lease of the United Railroads of New Jersey, and the assumption of their fifty millions of liabilities. In times of prosperity these lines might have taken care of themselves, and the President of the Pennsylvania Railroad might have made his office a sinecure; but with four great companies contending for a traffic that was each year growing less and less remunerative, while interest continued a fixed fact, and called for the full amount set down in the bond every three

or six months, it required the closest economy, the most skilful direction and unsleeping watchfulness to make the surplus meet the deficit. The Western lines had brought in 1873 three millions to the treasury of the Pennsylvania Company, but the year after they earned two millions less, and cost two millions more to operate, thus changing in a single year a surplus of three millions into a deficit of more than half a million. The next year the loss amounted to three quarters of a million, and the loss on the United Railroad lease continued every year, seemingly without recovery. Then, too, in spite of failing revenues, the company was compelled to make ready for the great work it had to do during the Centennial; engines, cars, stations and tracks were to be provided, and all these cost money. How well this was done has been cheerfully attested by railroad men all over the world. Never before in the history of railroads was such a volume of business done, so many passengers carried with so little loss of time and without the cost of a single life. This of itself is a record sufficient to satisfy the highest ambition of a railroad manager.

#### A SHORT SEASON OF REST.

But the business of the year, profitable though it was, brought with it heavy expenses, and the winter of 1876-7 found trade far from reviving. Then came the riots of July, 1877, during which Col. Scott not only made his headquarters, but his home, in the station at Thirty-second and Market streets until he removed his headquarters to the field. And at the close of this long and trying year he, almost for the first time, had to meet angry criticisms upon the part of the stockholders. It was plain to the directors that he must be induced to take some rest, and when the effects of an accident on a western railroad many years before re-appeared in the shape of an attack of paralysis that affected the upper half of the right leg, they voted him an indefinite leave of absence, and appointed a committee to notify him of their action and urge his acceptance. Taking with him the late Morton McMichael, one of his most intimate personal friends, they visited him at his home and assured him that the affairs of the company were now in such a condition that he could be spared to take the rest so much needed. He was at first disinclined to leave, but Dr. Mitchell joined with his friends, and his immediate departure for Europe was decided upon. Not until it was known that he would go was the action of the directors made known. He went abroad, traveled leisurely over the Continent, spending the winter at Nice, and then going up as far as the first cataract of the Nile. The trip was the more enjoyable as it was only the fulfillment of an intention formed just before he assumed the presidency. He had barely crossed the ocean in the fall of 1878 when the crash came, and he was summoned back by cable, since which time he had been chained to the wheel.

Returning home late last fall, he entered upon his duties with renewed vigor, but he soon found that he could not work as he once had. He endeavored to do as little as possible, but he found himself involuntarily reaching the office ahead of business hours, and frequently staying after hours, except when taken home by Mrs. Scott, who often went to the office with the intention of getting him away before three o'clock. While there he continued to dispatch business with his accustomed rapidity, but he was compelled to acknowledge to himself that his retirement from a place he had hoped to fill until his death was only a matter of time. As early as last January he contemplated it, and began making preparations for the step. Mr. Roberts replaced him in most of the Western boards, and Mr. Kneass in some of the minor boards. He thought first of resigning prior to the annual meeting, but more intimate friends urged him to remain over and sit at least until dividend day; in accordance with their request, the letter which was read on Saturday was deferred until then.

#### THE COMING PRESIDENT.

Thirty years ago George B. Roberts, then sitting at his desk in a surveyor's office, and serving the Pennsylvania Railroad as a rodman, is reported to have said that he had rather be president of the Pennsylvania Railroad Company than of the United States. In little more than a month he will attain his ambition, for his succession is almost absolutely certain. He has been close beside Colonel Scott for many years. He first entered the service of the company five months later than Col. Scott, as rodman in the engineer corps. During the summer following his accession to the road, in March, 1851, he became Assistant Engineer in charge of the division on the summit that included the great tunnel. In 1852, in the fall, he left the Pennsylvania to become Assistant Engineer of the Philadelphia & Erie, and during the ten years that followed he was actively employed in building railroads. He was an engineer on the North Pennsylvania which was opened in 1855, and on the Northwestern. On the Allentown, the Mahanoy & Broad Mountain, and the West Jersey he was Chief Engineer, and filled that office when they were completed. In 1862, on May 28, he was called to the position of Assistant to the President of the Pennsylvania Railroad, on account of his engineering skill and ability as an administrative officer. Seven years later, on May 3, 1869, he was made Fourth Vice-President, and March 26, 1873, Second Vice-President. When Colonel Scott was elected President, June 3, 1874, Mr. Roberts succeeded him as First Vice-President, and during Colonel Scott's absence in Europe for a year and a half he was Acting President. He has for many years occupied a prominent position in the boards of roads controlled by the Pennsylvania, and, as has been stated above, has already succeeded Colonel Scott in most of the Western boards. His promotion is an indication of the continuance of the same policy that has characterized the management of the road since the accession of Colonel Scott.

#### OTHER CHANGES.

The election of Vice-President Roberts to be President will cause some changes in the system, possibly. By general consent it seems to be agreed that the duties of the First Vice-President will be assigned to Mr. Cassatt, who will be advanced to the position vacated by Mr. Roberts. He has grown up in the same school, and has been both Superintendent and General Manager of the road. Mr. Smith will remain as Second Vice-President, his duties being financial almost entirely. It is not believed that there will be any change in the assistants to the President, and it is not thought that Vice-President Cassatt's place will be filled at once. Of course all this is mere speculation, but the probabilities are such as stated above. The road has had four vice-presidents; it is not required to have more than one. If Mr. Roberts is elected President, it will not create any vacancy in the board, for he will be elected a director to succeed Colonel Scott, and then, upon being elected President, will resign his vice-presidency by virtue of which he now sits in the board. Should Mr. Cassatt be promoted, the board would have the power to choose a third vice-president, to act as a director or not, just as it pleased.—*Philadelphia Times*, May 3.

#### Report of the Georgia Railroad Commission.

The Georgia Railroad Commission has presented the following report to the Governor:

SIR: In compliance with law we respectfully submit this our first semi-annual report.

Appointed on the 15th of October, 1879, our meeting was

unavoidably delayed by reason of the serious illness of a member of the board till the 10th of November, on which day we organized by the election of James M. Smith Chairman and Robert A. Bacon Secretary of the Commission. We take occasion here to bear testimony to the value and efficiency of the latter in the discharge of the duties, for which his large previous railroad experience and familiarity with all the technical details of railroad management eminently qualified him.

Our first business was to determine carefully the exact extent and nature of our duties. Of the three commissioners only one was, by the act, supposed to be possessed of previous railroad experience, and so to the majority of the board, the problems presented were not only difficult and delicate, but also new.

We divided out the field of labor as the law suggests—assigning to one member the legal and constitutional points involved, and the questions of chartered rights; to another the study of general principles and the appreciation of economical and business laws, and to the third that part of our duties requiring previous practical railroad experience. The objects of the law were obvious, viz.: The prevention of extortion and unjust discrimination.

The powers bestowed to accomplish these objects were very great—so large, indeed, as to fill us with a profound sense of responsibility in their exercise. These powers are enumerated chiefly in sections 5, 6, 7, 8 and 15 of the act of Oct. 14, 1879, which, when boiled down and stated untechnically, make it the duty of the Commission to prevent extortion and unjust discrimination by making just and reasonable rates for freight and passengers; by making all necessary rules and regulations, and by publishing the same effectually and seeing to their fulfillment on the part of the railroad companies openly and without partiality—without secret rates or rebates.

The revision of all railroad agreements and contracts, and the right of all needful inspection and examination as to the condition and operations of the railroad were conferred, and the duty imposed to report semi-annually, including in the report suggestions as to needed legislation. This was to be done as a whole, and not piecemeal. We were not to rectify single, small and separate grievances, but under the terms of the law must virtually codify our first action as the basis of future modification. The rates were to be a system entire and complete in itself, applied to the facts of our own railroad system. The right to revise our action from time to time was bestowed. In all this the right to obtain exact information as the basis of our original action and subsequent revisions was necessarily involved.

This, our greatest and most difficult work, was to be accomplished the first thing of all, and "as soon as practicable." When prepared it was to be published for four consecutive weeks in seven newspapers in as many cities. Of this publication (which included, of course, some weeks of delay and much correspondence and careful proof-reading) we have endeavored to make the very utmost.

It has been the object of the Commission to furnish to every private citizen the means of understanding his own railroad business as fully and clearly as do the railroad officials themselves. There is no other safeguard equal to our exact understanding, on both sides, of the real rights of both. The limitations on our powers needed also careful consideration. These limitations are found in the constitution of the United States and of this state; in the charters of the railroad companies and in the act itself. Both the constitutions inhibit any interference with the chartered rights of the railroads. "Freight which comes from or goes beyond the boundaries of the state" is by the act itself in express terms excepted from the control of the Commissioners. Thus, extra-state commerce is excluded from our jurisdiction, except that its rates shall not exceed the local rates fixed by the Commission. This exception is very large, including at one stroke all imports and exports. It does not, however, apply to passenger rates, nor affect the power of the board over joint rates within the state. The regulations established by the Commission under the law are enforced by ample penalties to the state and damages to individuals so stringent that the board feels a deep sense of responsibility and anxiety for the just exercise of powers so large and enforced by such penalties. In the report of the Wisconsin Commissioner we observe that his powers are felt to be inadequate to his duties; he is to make brick without straw; quite the reverse in many particulars in our case. There is no sense of weakness, but rather of anxiety in the use of large powers—positive, not merely negative—which, like thumb-screws take a powerful hold, so that even litigation to test them is dangerous. For this reason our sense of responsibility has often been oppressive. After the study of the law our first action was to send a circular to each of the railroad companies requesting copies of existing tariffs of rates—passenger and freight—also of the reports for last year and for former reports as far as convenient, and for schedules of time, etc.

The railroads, without exception, and very cheerfully, responded to our circular (except that some special rates were not received) and many of them gave assurances of their cordial cooperation with the work of the Commission.

The tariffs presented for our study as actually of force, presented a diversity of rates wider than we were prepared to expect, reaching in extreme cases a ratio of 9 to 1, for the same class of articles over the same distance. But the diversity of any whole tariff as compared with any other at whole, was by no means so great—say probably 2 to 1. Although the material called for was promptly given, it was insufficient. We soon saw that in a business so large and complex, correct and well-ordered bookkeeping lies at the bottom of all correct knowledge. The most experienced railroad men—when they have kept some special book for a time—have been surprised at the comparison of their own conjectures with the results of actual experience.

In addition to the study of the facts of our own railroads, we have studied much the principles which ought to control in fixing rates.

What are just and reasonable rates?

By what standard are they to be measured? In answering these questions, we have studied the reports of various railroad companies, the analysis of the cost of operating—the principles as set forth by the railroad commissioners of different states—by the experts examined before the state legislatures and the congressional committees, and the rates as fixed by the commissioners of other states.

The scale as to distance, the scale as to class, has been determined by the best lights before us.

After all our efforts we fall back with great satisfaction upon that provision of the law which gives us the privilege from time to time of rectifying our own honest errors. Those who know most of the problem will best appreciate its difficulties and concur in this expression of readiness to accept of fresh light derived from discussion and experience.

The chief results of our labors are seen in the "schedule of rates," etc., published in the seven city papers and covering one whole page of each paper, and in circulars No. 1, 2, 3, 4, 5 and 6.

Our first tariff we felt to be provisional. Whether one tariff only should first be published, or whether the roads be classified and tariffs published for each class, was much discussed. At length it was decided to publish a standard tariff and issue a circular to the railroads and public to show



cause for any modification, presenting their wishes and plans in writing, accompanied by exact information exhibiting the effect of the changes on their business.

In effect, circular No. 1 places the onus of complaint where it properly belongs, not on the public, who are not organized and have small means of information, but on the railroads, who are organized and have the data for exhibiting results. In a word, this action was a loud call for light and information, and it has been promptly responded to. It has been objected to by some as too strong a step forward, but it was regarded by the Commission as necessary to prompt action and capable of such treatment as to avoid any great hardship. To prevent this, the operation of the tariff, which would have gone into effect April 6, 1880, has been postponed till the 1st of May, 1880, the roads agreeing to waive the four (4) weeks' publication, and put the commissioners' tariffs into operation on that day, whether the notice had been fulfilled or not.

One good result is that the railroads will perceive the advantages, and more fully and readily appreciate the necessity of such book-keeping as really throws most light on their own operations. We are now earnestly engaged in this difficult work, on which really the whole railroad problem hinges. A circular will be shortly issued for temporary use, and thereafter a more carefully prepared method be recommended.

The most important rule adopted by the Commission and the most far-reaching in its consequences in the prevention of unjust discrimination is rule No. 6, by which discrimination is prevented as between communities as well as between individual customers.

We have as yet scarcely assailed those parts of our duty which embrace joint rates, contracts between railroads, the condition of the railroads themselves, needed legislation and the like. All these duties we will enter upon as soon as the first and chief duty is done, and embrace results in our next report.

We have the honor to be very respectfully yours,  
JAMES M. SMITH,  
CAMPBELL WALLACE,  
SAMUEL BARNETT,  
Railroad Commissioners of Georgia.

#### Passes.

Few people are probably aware of the numerous applications that are made for passes on railroads, or the variety of excuses that are offered by the parties who ask for them. The following is about the average daily experience of a railroad superintendent.

The superintendent busily engaged trying to figure out a plan to increase revenue and decrease expenses in order to get sufficient money out of the business to pay the poor employees, to say nothing about paying the patient bondholders their interest on their long-past due coupons.

Enter a well-dressed, portly gentleman, whom we will call General, who, with much suavity of manner, mixed, however, with a little pomposity, says: "Good morning, Colonel Jones; I just dropped in to have a little chat on business."

Now, Jones, the Superintendent of the Long-Short & Quickest Railroad Co., not accustomed to being addressed by such a high-sounding military title, feels considerably flattered, and also sees visions of large and profitable shipments of grain or merchandise, in the rubicund face of his caller, and with the blandest of smiles, says:

"General Smith, I am delighted to see you; in what way can I have the pleasure of serving you?"

"Well, Colonel, I notice your road is prospering, and I attribute it all to your very excellent management, which I think far exceeds that of your predecessor."

The Superintendent begins to feel as if he was about to secure a valuable customer, and says he will endeavor to keep up the reputation of his road by keeping it in good order, having gentlemanly employees and carrying freight and passengers in the best and quickest possible manner. Now the General opens up his heart and business, and says:

"Now, Colonel, I expect to spend a portion of the winter at the capital, and as there will probably be some bills before the House affecting your road, I would like an annual pass over it, as I shall be in a position to secure the influence of some of the members."

The Superintendent, although greatly disappointed, thinks probably it is the best policy to give the applicant a pass, but does it with inward cursing, feeling he is being imposed upon. He now turns to his desk, supposing the General has all he wants and will retire. Not so, however, the General is only half satisfied, and opens up again with:

"Now, Colonel, there is my son James would like a pass for himself and wife." The Superintendent (now feeling a little nettled) says:

"On what grounds do you ask a pass for your son?"

"Well, you see, Colonel, my son is a large shipper and a man of great influence, and it will be greatly to the interest of your road to give him and his wife an annual pass."

The Superintendent calls his Freight Agent, and upon inquiry finds that the General's son has never shipped a pound of freight over the road, and consequently tells the General that there is no possible excuse for giving the son and wife a pass and he will be obliged to refuse. The General, although he has a pass in his pocket, to which he is in no way entitled, rises with great dignity and moves out of the office, with this parting shot:

"Colonel, if you do not run your road upon more liberal principles you need never expect to make it a success."

The Superintendent is hardly settled to his work again before there is another interruption. This time a very seedy looking individual, who proceeds directly to business with:

"Bees ye the Superintendent of the railway?"

"Yes, sir."

"Can ye give me a pass to Oskylucy?"

"Why do you ask me for a pass? I don't know you; what is your name?"

"Well, ye see I've always heard ye was a kind gentleman and hadn't the heart to refuse a poor man, so I made bould to ask ye. My name is Tim Maloney and I've wrought on the gravel train in Minneshty, and hearin' there bees plenty work goin' on at Oskylucy thought I'd be goin' that way."

The Superintendent says, "I can't pass you." Tim goes off growling, "Tis darn'd mane ye's are to refuse a poor man a ride."

The Superintendent now says to his clerk: "Close that door and don't let anyone in till I tell you." He gets to work again, hoping there will be no more interruptions for at least an hour. But a short time elapses, however, before there is a knock at the door and the clerk says, "There is a lady who wants to see you on a matter of great importance."

The Superintendent is too gallant to turn a lady away, and says: "Tell her to come in," offering a chair, which the lady drops into, with a wilted, mournful air. Finally, raising her veil slightly, she says:

"I beg pardon for interrupting you, but I am a poor widow, my husband was killed in the war. I have friends in Chicago and if I can get to them they will help me, and I also think I will be able to get a pension now. I would not ask charity of you, were I not driven to it by abject poverty,

but feeling, as I have many times of late, the pangs of hunger, have summoned up courage to come to you and ask for a pass to Chicago."

Now the Superintendent is in a quandary. He knows his corporation is not a charitable institution, and that he has no more right to give free rides than he has to give away their money; but he is tender-hearted; there is before him a picture of suffering and despair; he imagines his wife or sister being some time similarly situated, and says: "Madam, what name did you say?" And upon her answering "Mrs. Smith," he fills out a pass and says: "There, madam, is five dollars to provide food on the way, and lodging in Chicago until you find your friends."

Mrs. Smith's heart is too full to utter the thanks she apparently feels, and she leaves the office sobbing. Now just imagine the Superintendent's feelings when, about two weeks after this lady's interview, a friend says to him: "I was sitting behind two ladies in a coach on the day express the other day, and heard one say to the other: 'Oh! Mrs. Smith, you have a pass; how did you get it?'"

"Now, don't you say anything; but I called on that new superintendent, Jones, and played the poverty dodge on him so successfully that he not only gave me a pass, but five dollars to buy my meals. He's awful soft."—*Keokuk Gate City.*

#### Testing Oils by Electricity.

A United States patent for a new device for testing oils was allowed to Mr. F. S. Pease, of this city, in 1879, and was issued to him the present month. The new electrical apparatus is simple in construction and perfect in its operation, and meets the great want of a reliable test for refined petroleum oil under heat. It consists of an oil and a water bath, thermometers, an induction coil and battery, bridges and electrical poles, etc., and arranged to allow for all expansion and to measure and correct it. The ordinary closed and open test now in general use cannot be called absolutely correct, owing to the variations in expansion, the uncertainty in the application of the fire to the oil, there being no standard established as to the amount of fire to be applied or the point at which the vapor is to be ignited, the application of the point of light to the oil being optional with the operator.

The new electrical test obviates all the difficulties heretofore experienced, and the tests are always the same, and absolutely correct to a fraction of a degree. It determines the expansion of the oil, accounts for, corrects and measures it; also prevents the escape of the hydro-carbon vapor, and regulates and keeps the oil at a fixed height and exact distance to the point of combustion, all of which has never before been accomplished. The electrical poles are so arranged as to detect the vapor in its minimum quantity, and at any point horizontal with, or perpendicular to, the oil, and the igniting points are always at a determined distance to the oil. The electrical arc is also provided for, and a positive or negative discharge made as wished, and sometimes required. Some twenty electrical changes can be made, and always at a determined point to the oil. In testing refined oil the ordinary quantity used for the oil bath is about three and one-quarter fluid ounces, equal to 91.14 grammes; and properly refined, that is, an unmixed oil, and in the distillation cut off at 52 degrees Beaume, with a yield of say 17 to 20 per cent., with a flash of 150 to 152 degrees and fire test of 180 degrees Fahrenheit, and market gravity of 45 to 46 degrees Beaume, and real specific gravity of 800—such an oil heated to its igniting point expands four grammes, consequently the surface of the oil and vapor is nearer to the fire at every degree of heat, and at its igniting point is 0.32 to 0.48 centimetres nearer than at the commencement of the test. This is the case with all open or closed tests used at the present day, and no provision has ever before been made to test this important point.

In high-test oils the amount of the hydro-carbon vapor is small and is developed in detached quantities up to the point of combustion, and not of sufficient quantity to cover the oil test surface, and its tendency or attraction is to the moist sides of the oil bath; and when the test is usually made the vapor ignites at the side of the cup first, travels the entire circumference of the oil bath before flashing over the surface, while the centre surface of the oil is comparatively free. In low-test oils the vapor is disengaged at every degree of heat, making them more or less dangerous, and it only requires the half of one per cent. of this vapor to make oils dangerous. Professor Chandler of Columbia College, New York City, reports "that not one of seventy-eight samples selected at random throughout cities may be called safe."

Mr. Pease finds that refined petroleum oil is a good, if not a perfect, non-conductor of electricity; that by adjusting the two poles to 0.32 of a centimetre apart and placing them in the oil a discharge from a O M 30 induction coil will not go through the oil, but will discharge between the two poles out of the oil, which are 1.02 of a centimetre apart. This fact enabled Mr. Pease to adjust and arrange a test to a minimum by arranging a pole in contact with the oil, with its point projecting upward toward a downwardly projecting point of the other pole. A moist surface of sufficient size being provided for the vapor, by this arrangement the vapor is detected and explodes at the surface centre of the oil bath as well as at other points, the spark being perpendicular to or from the oil. The electrical arc of a horizontal spark is a severe test, making a difference of one or more degrees for or against the oil.

Mr. Pease's ingenuity has been displayed in a great many ways for the past thirty years, but it may be questioned whether his mechanical skill has ever better expressed itself than in the device referred to.—*Buffalo Courier.*

#### Railroad Mail Transportation.

The Postmaster-General transmitted May 4 to the House of Representatives a communication from W. B. Thompson, General Superintendent of the Railway Mail Service, on the subject of special mail service on railroads, and recommended that appropriations be made in accordance therewith. Superintendent Thompson says: "The compensation to railroad companies for carrying the mails is based, in the main, on the weight of mails carried. On the great trunk-lines, as is shown by each successive weighing, the weights are constantly increasing, and, as a consequence, they are continually carrying more mails than they are paid for. In 1876, the great reduction in the cost of materials used in the construction of railroads and cheapness of labor having been taken into consideration by Congress, the rate of pay fixed by the act of March 3, 1873, was reduced 10 per cent., and again, on account of a further reduction in the cost of these items, another decrease of 5 per cent. was made from July 1, 1878. Because of the continued increase in the weight of mails and consequent demand upon the trunk-lines for additional facilities, they became dissatisfied and declined to include postal-cars in their fastest trains, as well as to provide such additional facilities as were necessary to a proper and expeditious transportation and distribution of the mails. Under these circumstances, an appropriation of \$150,000 was made, to enable the department to obtain proper facilities upon the great trunk-lines. The special fund was used this year on the lines carrying the heaviest mails, to secure special trains and railway post-office

equipments on the great Southern lines. The price of all material used in the construction of railroads, as well as the cost of labor to operate them, now approximate the rates current prior to the reductions, while the rates allowable for the service remain the same. It follows, therefore, that there is now more reason for the use of the special fund next year to further improve the service, which can be done at slight cost as compared with the benefits to be derived. It might also be well to state that on second and third grade trunk-lines schedules have been abridged, connections brought about and special trains provided on account of the mail service."

Mr. Thompson, after detailing the manner in which the \$150,000 has been expended during the present fiscal year, showing the special trains arranged for it, says: "I believe that the expenditure of the special fund has been judicious and in the interest and for the benefit of the patrons of the Post Office Department, and I further believe that all of the present special facilities for the present fiscal year should be continued during the next, and increased in accordance with the estimate in your annual reports. In conclusion, permit me to call your attention to the fact that the last annual report shows that the amount appropriated out of the treasury to meet the difference between the receipts and expenditures was less than for several years, and all the indications now are that such deficiency or excess of expenditures will be far less than last year, notwithstanding the great improvements that have been made in the service."

In accordance with these recommendations, the House Committee on Post-Office and Post-roads declined to offer the following amendments to the post-office bill: That the appropriation for railroad routes be increased \$500,000, so as to make the aggregate amount \$1,000,000; that an additional sum of \$400,000 be inserted for special transportation and fast mails; that \$50,000 be added for the pay of railway mail service clerks, and that the item of \$5,000 to purchase the right to use return postal-cards by the Post-office Department be inserted in the bill.

#### RAILROAD LAW.

##### Remedy for Wrongful Taking of Land.

In the Atlantic & Great Western Co., appellant, against Robbins and others, the Ohio Supreme Court lately held:

1. The owner of land which has been unlawfully and wrongfully taken and appropriated to its use by a corporation authorized by law to appropriate land, cannot maintain an action for the value of the land so taken and appropriated, and also damages accruing by reason of such taking and appropriation, if the circumstances are such that he may recover the land itself.

2. In such a case the owner may recover compensation and damages, by special proceedings, under section 21 (69 Ohio Laws, 88, 85; Rev. Stat. Secs. 6,448-6,450), or the land itself, as in other cases of unlawful entry.

##### Contributory Negligence—Fastening a Horse.

The care of horses in the street was a question in the case of Wasmore against the Delaware, Lackawanna & Western Co. in our Court of Appeals in February last. The person injured by the train was a peddler of kindling wood. His horse, standing untied on the side of the street near the sidewalk, but not near the track of the railway in the street, he stepped across the track to attend to a customer on the other side of the street, and while so doing the horse took fright at an approaching train, and he, in an endeavor to turn the horse from the track, was thrown down and killed. The Court held that the conduct of the deceased was not as matter of law contributory negligence, but whether allowing the horse to stand unfastened was negligent or not was a matter for the jury; nor could the Court say as matter of law that he had violated a city ordinance which forbade any one "leaving a horse on a street unsecuredly tied," for it would be competent for the jury on this evidence to find that the horse was not "left" by his owner. This is certainly as liberal a rule as licensed venders could ask.—*New York Daily Register.*

##### Transferability of Land-Exploring Tickets.

Travelers from the East have been surprised at the number, as well as the audacity, of the scalpers who flourish in large Western cities, and have doubtless wondered how they could supply any railroad ticket at a figure so much below that asked by the company. A chief source of the scalper's supply is in the practice, common among railroad companies, especially during the Summer, of selling excursion and other round-trip tickets at figures much below the usual rates, a round-trip ticket often being sold for little more than the regular fare one way. A ticket of this kind is frequently bought by a person who himself uses it but one way, and sells the return coupon to a scalper for considerably less than its value. In this way, the railroad companies have carried thousands of passengers at reduced rates, while the advantages of the cheap tickets have been shared by the scalper and his customer. To protect themselves against this practice, without losing the gains of their excursion business, the companies have devised various kinds of "iron-clad" tickets. One of these has been the subject of a recent case before the Supreme Court of Nebraska. The plaintiff had bought, at the office of the Chicago, Rock Island & Pacific Railroad Company, a "land-exploring ticket" from Chicago to Lincoln, Neb., and return. The regular fare each way was \$18.75, but the price of the round-trip ticket bought by the plaintiff was only \$23.75. It had, however, several conditions printed on it, to the effect that it was to be used only by the purchaser, who for purposes of identification was to sign his name to the ticket when buying it in Chicago, and also at the company's office in Lincoln before starting on the return trip. The purchaser further agreed to sign his name in the presence of any conductor wishing proof of his identity. It was also understood that the object of the passenger in making the trip was to examine the company's lands with the view of buying. When the plaintiff bought his ticket in Chicago, nothing was said to him about signing his name to it, and when he went to get the ticket stamped in Lincoln, preliminary to returning, the company's agent refused to stamp it because the plaintiff had not signed it in Chicago. On the return trip the conductor refused the ticket because it was not stamped, and put the plaintiff off the train. The latter thereupon brought an action for damages. The court held that the plaintiff was entitled to return on the ticket, though not signed by him or stamped by the Lincoln agent. The company had a right, for purposes of identification, to require the purchaser to sign the ticket, but if it failed to do so, the ticket did not thereby become void. Then it was objected that the plaintiff was not a "land explorer," and therefore, had made false representations. There was no proof of this, but, even if there had been, it would have made the contract voidable, not void—that is, the company might have cancelled the ticket at Lincoln by tendering the buyer the difference between the regular fare from Chicago to Lincoln and what he paid for the round-trip ticket. The court further remarked that the ticket was not transferable, and hence no one but the original purchaser had a lawful right to use it.—*New York Times.*



## THE SCRAP HEAP.

## Railroad Equipment Notes.

The Wason Manufacturing Co., at Springfield, Mass., has built 207 first-class passenger coaches for the Central Railroad, of New Jersey, since 1863. A correspondent wants to know if any other car-works in America have built that number of first-class passenger cars for a single road.

The Michigan Car Co., at Detroit, now employs about 1,250 men, and is pushing work in its shops as fast as possible to fill orders on hand.

The Rogers Locomotive Works, at Paterson, N. J., have just delivered two new freight engines to the Housatonic Railroad.

The Detroit Car Spring Co. is making about 1,200 springs a day, and proposes to enlarge its works shortly.

The South Carolina Railroad shops at Charleston have lately completed three new passenger coaches and several baggage cars. They are now building new freight cars for the road, turning out six per month.

The Jackson & Sharp Co., at Wilmington, Del., has lately built nine passenger cars for the South Carolina Railroad.

## Iron and Manufacturing Notes.

The Cleveland Rolling Mill Co., at Cleveland, O., will increase its capital stock from \$2,000,000 to \$4,000,000, the stockholders having unanimously voted to authorize the increase.

The Catasauqua (Pa.) Dispatch of April 24 says: "The blast on No. 1 furnace of the Crane Iron Works was taken off on Sunday last, and its ancient walls are being torn down. This furnace was the first successful anthracite furnace erected in America. Ground for the location of No. 1 was broken by Mr. David Thomas in the summer of 1839; blast was applied July 4, 1840. The structure is 11 ft. at the base, and is 45 ft. in height, and has been in operation for almost forty years, except when necessary repairs were required. When first lighted, the blast was driven by means of water-power, which has been replaced by powerful steam engines."

## Bridge Notes.

Cofrode & Saylor, of the Philadelphia Bridge Works, Pottstown, Pa., have taken the contract to build the new depot at Camden, N. J., to be used by the Amboy Division of the Pennsylvania Railroad and the West Jersey road. They are building now two iron bridges and two turn-tables to go to Japan.

The contract for five highway bridges in Allegheny County, Pa., will probably be awarded to the Massillon (O.) Bridge Co., the lowest bidders.

The Iron City Bridge Co., of Pittsburg, has the contract for the iron work of the new Union depot in Chicago.

Leavett & Co., of Boston, have the contract for building a bridge at the Stony Brook crossing in Weston, Mass., for the Massachusetts Central road.

## Prices of Rails.

Steel rails are unsettled, and prices variable, though a good deal of business is reported. Quotations are \$72.50 to \$75 per ton at mill for American rails, and \$68 to \$70 at tide-water for foreign.

Iron rails are quoted at \$53 to \$55 per ton at mill for heavy rails and up to \$57 for light sections and street rails. Much inquiry is reported, but few transactions closed.

Old iron rails are going down and sales are reported at from \$34 down to \$30 per ton, with light demand.

## A Color-Blind Crowd.

The subject of color-blindness came up at a ferry-dock saloon the other day, and an old ex-captain offered to test the eyes of several sailors present. He got off his stool, laid down his pipe, and began:

"Now, boys, what's the color of my nose?"

"White!" they replied in chorus. "It was as red as a beet, but they were after a drink."

"Correct," said the captain. "This convinces me that your eyes are all right as to the color of white. What is the color of my hair?"

"Gray."

"Correct again, except the sandy spots. You'll all pass on white and gray. What is the color of that dog out there?"

"Black."

"So it is. And the color of this chair is—what?"

"Red."

"And of this?"

"Blue."

"And what is my general appearance? That is, if you saw me forty rods off how would you describe me?"

"As a perfect gentleman," was the ready reply.

They thought they had him, then. He started for the bar, but halted and finally sat down, and had no more to say for a long ten minutes. After they had despaired of getting any beer at his expense and were about to go out, he suddenly said:

"Ah! boys, one more question. If I should treat this crowd what would be the color of the liquid?"

"It would be the color of beer," they hopefully shouted.

"Blind as bats—worst case I ever saw!" he mumbled, as he took his hand from his pocket. "It would be exactly the color of ice-water!"—*Detroit Free Press.*

## Fast Time.

The Chicago Times gives the following as the result of a trial said to have been made near that city:

"Eight miles were run, the first two being used for reaching the high speed. Six miles were then run, timed by two stop-watches, and with the following result:

Miles.	Second.
First.....	52
Second.....	53
Third.....	53
Fourth.....	53
Fifth.....	51
Sixth.....	51½

"The above shows an average speed for the six miles of a small fraction less than 70 miles per hour, the highest speed obtained being 70.6 miles per hour."

"The test was made with one coach, on the stone-ballasted track of the Pittsburgh, Fort Wayne & Chicago Railway, about 25 miles east of Chicago. The engine was built at the Fort Wayne shop. It has a 17×24-inch cylinder, with five-foot driving-wheels, and is one of the standard passenger engines owned by the company. This test disproves the oft-repeated assertion that a speed of 60 miles per hour has never been exceeded by an American engine. The engineer on this occasion was William Jackson."

An official statement of this trial would be interesting.

## Car-Lighting in Germany.

One of the subjects reported upon at the technical convention of the German Railroad Union in 1878 was the lighting of cars. Reports were asked from the several companies with regard to the improvements effected in the illumination of passenger cars, particularly with gas, and the cost of applying, keeping in order and running the different systems.

## LOCOMOTIVE RETURNS, JANUARY, 1880.

Master Mechanics of all American railroads are invited to send us their monthly returns for this table.

NAME OF ROAD.	Number of locomotives in service.	Number of miles operated.	MILEAGE.		MILES RUN TO		Average No. of freight cars hauled.	Average cost per freight car per mile, cents.	COST PER MILE IN CENTS FOR						AVERAGE COST OF	
			Ton of coal.	Card of wood.	Pinch of coal.	Repairs.			Fuel.	Stokers.	Miscellaneous.	Engineers, firemen and wages.	Total.	Coal per ton.	Wood per cord.	
Allegheny Valley, River Division*.	139	38	87,172	2,994	33.30	21.42	21.80	5.57	3.32	0.53	0.00	15.51	15.51	5.50	5.50	
Low Grade Div.	120	17	37,211	2,180	27.82	19.75	30.50	3.36	3.77	0.64	6.01	18.78	18.78	2.81	2.81	
Atlantic & Great Western, 1st and 2d Divs.	228	81	236,819	2,924	36.58	16.52	18.10	3.72	0.53	0.48	1.29	5.10	17.00	2.29	2.81	
Third and Fourth Divs.	107	45	139,497	2,847	28.07	24.26	17.10	5.06	0.65	0.90	1.23	4.08	20.71	2.47	2.81	
Mahoning Div.	88	45	148,989	3,311	33.02	23.08	20.40	3.40	0.73	0.38	0.73	5.00	16.33	2.13	2.81	
Camden & Atlantic.	67	07	78,307	2,700	47.88	20.49	.....	5.70	12.22	0.41	0.35	7.46	20.25	5.75	5.50	
Central Pacific, Western Div.	300	28	78,367	2,700	47.88	20.49	.....	6.48	13.87	0.43	0.35	7.54	28.07	5.75	5.50	
Northern & San Pablo Div.	104	30	67,287	2,343	42.30	10.60	.....	3.44	13.64	0.37	0.12	6.28	34.90	5.75	5.50	
Visalia Div.	157	10	24,707	2,471	42.56	23.20	.....	4.12	14.78	0.47	0.24	7.40	27.10	5.75	5.50	
Tulare Div.	171	11	28,077	2,552	30.38	10.63	.....	4.14	9.76	0.42	0.25	7.15	21.72	5.75	5.50	
Los Angeles, San Diego, Yuma & Wilmington Divs.	508	28	64,299	2,290	50.00	21.72	.....	0.76	15.57	0.41	0.85	0.80	33.80	5.75	5.50	
California Pacific Div.	179	12	29,521	2,460	37.76	22.95	.....	1.44	11.28	0.38	0.33	6.52	19.95	5.50	5.50	
Stockton & Copperopolis.	49	3	5,564	1,855	43.00	22.65	.....	5.05	10.58	0.40	0.38	9.01	34.42	5.50	5.50	
Sacramento Div.	119	36	80,283	2,425	28.09	21.40	.....	3.91	10.41	0.29	0.14	5.94	22.00	5.50	5.50	
Oregon Div.	151	7	24,021	3,432	.....	44.32	30.25	8.32	18.13	0.42	0.30	8.16	35.33	5.75	5.50	
Truckee Div.	205	27	60,898	2,478	35.46	28.81	20.58	7.64	15.00	0.33	0.30	7.82	32.13	5.75	5.50	
Humboldt Div.	200	10	51,905	2,737	30.61	23.18	.....	3.90	10.88	0.48	0.23	7.05	31.54	5.75	5.50	
Salt Lake Div.	219	27	76,698	2,841	29.15	19.02	.....	3.46	4.06	0.41	.....	5.31	13.23	.....	.....	
Chicago & Eastern Illinois.	153	31	81,025	2,614	31.00	17.00	33.00	3.06	8.91	0.35	.....	6.75	18.27	.....	.....	
Cin. LaFayette & Chicago.	75	10	26,821	2,082	27.08	13.58	.....	3.14	6.45	0.57	.....	6.81	16.77	.....	.....	
Cleve., Col. Cin. & Ind.	472	143	435,290	3,044	38.13	24.00	.....	3.24	3.85	0.40	2.52	6.70	16.80	1.40	3.00	
Cleveland & Pittsburgh.	225	82	176,450	2,152	38.82	18.42	17.70	3.08	6.53	0.38	2.60	5.90	18.55	2.00	2.95	
Cleveland, Tus. Valley & Wheeling.	125	15	44,155	2,944	39.21	19.91	35.00	3.38	1.57	0.42	.....	5.69	11.40	.....	.....	
Del., Lacka. & Western, Bloomsburg Div.	80	21	60,577	2,885	.....	34.03	.....	3.07	4.40	0.52	.....	4.25	7.84	.....	.....	
Erie & Pittsburgh.	198	28	62,063	2,250	36.07	17.28	16.30	2.93	4.40	0.50	1.70	6.38	15.88	1.75	1.75	
Grand Rapids & Indiana.	392	36	108,430	3,012	42.71	16.83	.....	3.01	7.30	0.45	1.70	5.05	18.21	3.45	2.50	
Green Bay & Minnesota.	240	15	32,455	2,164	48.43	25.47	.....	2.15	7.45	0.32	0.04	4.43	14.30	4.80	2.00	
Houston & Texas Central.	512	62	205,290	3,311	43.00	40.50	16.80	4.32	6.95	0.44	1.00	6.43	10.17	4.40	2.00	
Illinois Central, Chicago Div.	402	08	248,947	3,541	32.30	14.83	10.04	3.83	4.50	0.32	.....	5.76	14.51	1.40	3.75	
North Div.	345	52	13,210	2,540	36.01	14.41	14.02	3.05	4.74	0.32	.....	5.66	14.27	1.40	3.75	
Springfield Div.	113	15	30,563	2,037	37.78	21.29	13.92	3.12	3.03	0.27	.....	4.79	11.61	1.25	2.90	
Iowa Div.	401	43	112,491	2,610	26.63	15.00	10.93	3.76	7.92	0.31	.....	5.80	17.75	2.00	3.25	
Indianapolis, Cin. & LaFayette.	235	48	118,272	2,484	34.38	20.57	.....	2.29	5.17	0.34	.....	5.09	16.39	.....	.....	
Jeffersonville, Madison & Ind.	229	40	94,335	2,358	43.19	14.93	23.22	3.08	6.53	0.38	2.60	5.90	18.55	2.00	2.95	
Kan. City, St. Jo. & Council Bluffs.	247	30	105,451	2,929	40.00	20.40	20.30	3.80	6.00	0.30	.....	6.70	17.40	2.50	3.75	
Kansas Pacific.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Lake Shore & Mich. So., Buffalo Div.	84	19	102,804	2,295	31.23	26.45	.....	3.12	8.72	0.33	.....	5.81	18.02	2.00	3.00	
Erie Div.	117	25	255,818	2,212	33.21	26.68	.....	3.76	7.22	0.30	.....	5.57	16.87	2.25	5.43	
Toledo Div.	88	18	171,804	1,602	25.32	20.12	.....	4.02	10.43	0.37	.....	5.91	20.76	2.07	4.08	
Mich. Southern Div.	246	83	306,184	2,230	36.91	22.63	.....	3.65	8.44	0.29	.....	5.67	18.06	3.10	4.40	
Little Rock, Miss. River & Texas.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Louisville & Nashville, First Div.	332	62	133,708	3,157	38.01	13.60	17.54	2.59	6.98	0.37	1.53	6.83	18.12	1.90	2.80	
Second Div.	200	36	88,986	2,472	38.79	20.04	15.70	3.97	6.70	0.34	1.80	6.18	18.91	1.87	2.50	
Memphis Div.	131	20	47,172	2,359	33.65	16.92	15.40	3.81	8.02	0.38	1.58	5.50	19.36	1.87	2.50	
Nash. & Decatur Div.	122	23	55,793	2,426	27.80	13.83	15.52	4.76	7.17	0.37	1.80	6.12	20.31	1.94	2.30	
South & North Alabama.	189	31	100,090	3,248	29.87	18.31	13.92	5.11	6.00	0.35	1.65	5.46	17.57	1.76	2.00	
Evansville, Ind. & Nash. Div.	135	35	61,342	2,359	35.41	19.02	13.09	3.22	4.29	0.25	1.94	5.96	15.30	1.80	1.75	
Marquette, Houghton & Ontonagon.	86	11	13,942	1,207	42.62	20.42	19.63	1.19	10.90	0.40	.....	5.03	18.42	.....	.....	
Missouri, Kansas & Texas.	807	83	306,184	3,689	37.63	21.75	16.00	3.03	5.11	0.42	0.73	6.37	15.08	.....	.....	
North. Cent., Elmira & Can. Divs.	147	47	119,170	2,539	28.41	15.15	.....	3.28	6.48	0.52	.....	5.61	15.80	1.80	2.39	
Pennsylvania, New York Div.	129	10	335,143	3,351	35.41	20.04	15.70	3.97	6.70	0.30	.....	6.18	18.91	3.85	3.85	
Amboy Div.	186	46	100,039	2,175	45.93	14.45	.....	2.50	6.00	0.50	.....	9.00	30.30	3.84	3.84	
Belvidere Div.	103	35	62,987	1,590	33.78	14.45	.....	4.50	9.00	0.60	.....	14.10	30.00	3.80	3.80	
Philadelphia Div.	172	130	462,298	2,805	25.11	13.80	.....	6.00	5.10	0.60	.....	12.30	1.20	2.88	2.88	
Middle Div.	132	108	331,731	3,090	25.36	15.43	.....	5.10	4.90	0.50	.....	10.50	1.30	2.88	2.88	
Pittsburg Div.	226	174	462,234	2,650	21.05	11.00	.....	5.40	5.00	0.50	.....	10.90	1.30	2.88	2.88	
Tyrone Div.	119	33	87,244	2,006	20.14	16.34	.....	3.80	6.00	0.50	.....	10.10	1.20	2.88	2.88	
West Penn. Div.	164	22	43,475	1,976	32.38	32.08	.....	3.70	3.90	0.30	.....	7.30	1.20	2.80	2.80	
Lehigh Valley Div.	124	10	24,707	2,471	22.81	14.75	.....	2.10	5.30	0.50	.....	7.90	1.20	2.60	2.60	
Bedford Div.	57	5	10,091	2,018	28.92	25.38	.....	3.80	4.20	0.30	.....	8.30	1.20	2.60	2.60	
Frederick Div.	109	9	18,496	2,035	33.10	17.61	.....	0.90	8.90	0.60	.....	10.40	1.20	2.60	2.60	
Pittsburg, Va. & Charleston Div.	30	14	31,365	1,539	43.09	19.35	.....	4.90	2.90	0.40	.....	8.50	1.20	2.88	2.88	
Pitts., Ft. Wayne & Chi., East Div.	132	35	61,342	2,359	40.76	20.43	14.70	2.83	4.07	0.41	1.08	6.33	15.22	1.06	1.06	
Western Div.	280	112	329,492	2,862	30.10	18.30	22.60	3.50	4.09	0.44	2.15	6.09	17.30	1.36	1.95	
Pitts., Cin. & St. Louis, Little Miami Div.	197	38	100,597	2,905	44.80	12.78	15.94	3.71	6.02	0.50	8.41	5.55	19.10	2.63	1.50	
P. C. & St. L. Div.	224	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Que., Montreal, Ottawa & Occidental.	138	11	39,078	3,553	64.80	46.30	11.60	1.40	6.63	0.97	.....	3.40	11.70	4.00	4.00	
St. Louis & Southeastern.	208	.....	28,570	.....	43.30	16.00	.....	3.33	2.90	0.32	.....	4.03	11.17	1.32	.....	
Savannah, Florida & Western.	343	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Toledo, Peoria & Warsaw.	237	42	108,228	2,577	36.57	18.69	.....	3.77	3.83	0.53	.....	6.36	14.28	1.80	2.50	
West Jersey.	128	17	34,410	2,024	40.71	19.38	.....	3.90	9.40	0.50	.....	12.10	1.80	3.50	3.50	





Published Every Friday.

CONDUCTED BY

E. WRIGHT DUNNING AND M. N. FORNEY.

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## EDITORIAL ANNOUNCEMENTS.

**Addresses.**—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

**Presses.**—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

**Advertisements.**—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

**Contributions.**—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particularly as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

## THE RETIREMENT OF COLONEL SCOTT.

The resignation by Col. Thomas A. Scott of the presidency of the Pennsylvania Railroad Company, will attract the attention of the whole railroad world. Though he had been President of the company only six years, and during one of these was traveling abroad, he has long been a leading figure in the railroad world, and, doubtless, by far the most prominent figure in the great corporation whose presidency he now resigns, and will easily take place among the few really great railroad men, who have been developed by the early years of American railroads. Like his predecessor, he was all his life a railroad man, though, unlike him, he was not an engineer by profession, and his technical knowledge of the construction, equipment and working of railroads was not developed by constructing roads or rolling stock, but by operating them, and it may be supposed that his strength was rather in what we may call the politics of railroads—in organization and administration—and in their commercial business, or traffic management, than on the engineering side. He knew what to do with a railroad when it was built, understood the diplomatic arts by which it could maintain desirable relations with its connections; had a broad view of railroad business and its course, and of the national railroad system; looked far into the future and prepared for it, and if he did not create at least appreciated and maintained a system of railroad administration which is probably as effective as any in the world.

The Pennsylvania was the first of all American railroad companies to acquire full control of a great and compact railroad system. Although this was done under the presidency of the late J. Edgar Thomson, it was popularly credited both in plan and accomplishment to Colonel Scott. Very likely in this he was credited with too much. He was the active man who moved about and conducted negotiations, while Mr.

Thomson stayed in the Philadelphia office. Doubtless both had much to do with the plans, and doubtless others besides them had much to do with their successful accomplishment, but doubtless, too, Colonel Scott was one of the leading spirits as he certainly was the chief visible actor in the accomplishment of this great scheme, which changed a mere state railroad less than four hundred miles long into a vast system controlling lines to the three leading Atlantic ports and extending thence to almost every important city from the Ohio to the Great Lakes and as far west as Chicago and St. Louis. Ten or eleven years ago, the Pennsylvania and Colonel Scott were as active as the Wabash and Jay Gould have been for the past year or two. Every few weeks the lease or other acquisition of control of some new railroad was announced, and many of these were properties of the first importance, which, it is now easy to see, were necessary to the Pennsylvania Railroad, and without which it might easily have been crippled. But an undue eagerness seems to have been developed. The appetite for roads grew with what it fed upon. Not only were many important completed roads leased or their control secured by guarantees, but the construction of less important ones was secured in the interest of the Pennsylvania, sometimes, however, without the latter's incurring any obligations of moment—for after a time it was not necessary for the Pennsylvania Railroad to seek for more roads, they came to it of their own motion. If the name of that company or of Mr. Scott could be in some way attached to a railroad enterprise, that fact of itself gave it credit. A whole army of projectors besieged Colonel Scott to at least lend them his name to secure the construction of their roads—that is, to give them credit enough to get money to complete them—as “feeders” of the Pennsylvania Railroad. People already seem to have forgotten how his name was in demand. At one time the St. Louis, Kansas City & Northern had Pennsylvania men on its board, and was counted as an outlying member of its system, Colonel Scott for a year or two was President of the Union Pacific, and then it was the Pennsylvania which was said to be getting ready to monopolize the trans-continental traffic. The Davenport & Northwestern, which the Chicago, Milwaukee & St. Paul has recently bought, had Pennsylvania Railroad men engaged in its construction, and there were many other enterprises, some of which were realized and some not, which were furthered in some way, by names if not by credit, by the Pennsylvania Railroad managers. Most of the actual acquisitions were of undoubted value to the company, though in several cases too high prices seem to have been paid for them. But we must recollect these contracts were made in a time of great and growing business activity, when confidence in continued prosperity was general. Bargains which seem good at such times may very well turn out to be hard in a season of great business depression such as we have just passed through. Still, of the larger acquisitions of the Pennsylvania hardly any seems dispensable except the Columbus, Chicago & Indiana Central, and that was leased at a time when the company seemed likely to lose the Pittsburgh, Fort Wayne & Chicago, and its acquisition probably helped to secure this latter road, which has been very profitable directly, and still more so indirectly. The United Railroads of New Jersey have not earned their rental by several millions of dollars, and if the Pennsylvania could have built a line instead of leasing this, it would doubtless have saved a good deal of money by it. But when the United Company worked its own roads authority could not be obtained for building a new line from Philadelphia to New York. The effort had been made repeatedly and had always failed.

But there were some enterprises which the Pennsylvania Railroad Company entered into in those days which it seems hard to justify or understand. Chief among these was the Southern Railway Security Company, which was to absorb a large proportion of the Southern lines, but could hardly have any considerable effect on the profits of the Pennsylvania Railroad, because the Southern system could not be made a feeder of the Pennsylvania, as it would reach it only at Philadelphia, its eastern terminus. It was not impossible that the Security Company would be profitable in itself, but it is hard so see why the Pennsylvania should have had anything to do with it.

The Texas & Pacific, which was Colonel Scott's project, never had any assistance from the Pennsylvania Railroad Company, we believe. It was probably expected to be of considerable value to the Southern Security Company, but it could not, if completed, be of any great advantage to the Pennsylvania Railroad.

It was in these negotiations for leases and control—in great railroad combinations—that Colonel Scott be-

came famous, and these were all while he was Vice-President. Then he was much more before the public eye than he has been since he became President, as the work to be done of late years has been much less showy and striking, being the very prosy duty of meeting enormous obligations with limited means, and the overcoming of great financial difficulties and dangers.

It must be very gratifying to Colonel Scott that these difficulties have been overcome during his administration, and that when he leaves the company its prospects are fair for a long period of at least reasonable prosperity. The acquisitions which were made through him some ten years ago, and that recently have been sources of loss instead of profit, now in many cases may be expected to become directly profitable, and the system of the company is so complete and far-reaching that scarcely any future railroad combinations are likely to injure greatly its command of traffic. Notwithstanding all the combinations of recent years, this first of the great American railroad systems is still the most complete one.

It is one of the many advantages of a thoroughly organized system of administration like that of the Pennsylvania Railroad Company, that no one man is indispensable to it. Perhaps this was less true during the period of the formation of the system, in which Colonel Scott played the leading part, than it ever will be again. Then the company would have felt very seriously the loss of its First Vice-President—the field marshal of its campaigns. But now the company is abundantly supplied with capable and experienced men for all kinds of work which it has to do. During the long recent absence of the President in Europe, First Vice-President Roberts filled his place with great acceptance, and he certainly made a most excellent impression on the officers of other companies with whom he came in contact. He is said to have the confidence of the solid men of Philadelphia to a remarkable degree, and this will do much toward enabling him to command the support of the numerous body of stockholders of the company.

## THE MICHIGAN CENTRAL REPORT.

Long regarded as one of the most stable as it had been one of the most profitable of American railroads, the progress of the Michigan Central from a period of disaster to a period of prosperity deserves as much attention as its sudden lapse from among dividend-paying roads did in 1873. And so far as permanency of connections is concerned, the history of this road merits particular notice at this time, when, aside from the great number of actual consolidations taking place, there are acquisitions of interests in connecting roads by associated capitalists which the public quite generally seems to regard as equivalent in every respect—in present and in permanent effect—to actual consolidations. Before 1873 the Michigan Central was looked upon as the main stem of a great system of roads, not actually united, but largely owned by the same body of Boston capitalists and under the management of one man, Mr. James F. Joy. In this system were the Chicago, Burlington & Quincy, at one time the Hannibal & St. Joseph, the Burlington & Missouri River, the Burlington & Missouri River in Nebraska, the Kansas City, St. Joseph & Council Bluffs, the Leavenworth, Lawrence & Galveston, and the Missouri River, Fort Scott & Gulf, while shortly before 1873 a large number of less important enterprises, in some degree encouraged or supported by the Michigan Central or the Chicago, Burlington & Quincy, or some of the prominent men in these companies, or credited with being so promoted, were also counted as “Joy roads”—as the Chicago & Iowa, the Chicago, Dubuque & Minnesota, the Chicago, Pekin & Southwestern, the Burlington & Southwestern, the Chicago, Clinton & Western, the Atchison & Nebraska, etc. Though railroad men knew that there was little connection between the Michigan Central and these roads west of Chicago, further than that they were in the Blue Line and not in the Red Line or Union Line, yet the public very generally looked upon them as one system, and probably most of those familiar with railroad business supposed that they could and would be made into one system should it at any time appear greatly advantageous to the small group of Boston capitalists who seemed to control them all as if they owned them.

Now at this day there is no connection whatever between the Michigan Central and this supposed vast system of “Joy roads” west of Chicago, any more than with any other Chicago roads. Indeed, the Chicago, Burlington & Quincy has been out of the Blue Line for several years, while the Chicago & Alton and the Illinois Central remain in it.

But while the Michigan Central has lost those relations of common ownership and control with roads west of Chicago, and in that respect is just like all



other roads that enter Chicago from the East, it has entered into new and similar relations with lines east of it. It is now a Vanderbilt road as it was then a Joy road, with the same President as the New York Central and with, doubtless, a considerable portion of its stock owned by leading stockholders of the latter road, but with hardly any closer traffic connections with it than before (naturally they are and always have been intimate), and with no more certainty of permanence in this connection, probably, than in the old one, except that the Vanderbilt interest is known heretofore to have held on to what it had once acquired.

This road is one of those which suffer more from an unprofitable trunk-line through traffic than do the trunk-lines themselves, for the reason that a larger share of its traffic is through. It was the great reduction in through rates, and that alone, which took it for so many years out of the list of dividend-paying roads, and that has made its dividends so small since they were resumed. It is true that the numerous leased branches in Michigan did not earn their rentals; but the traffic has all the time grown faster than the fixed charges, so that but for the great reduction in rates, the losses on account of these causes could have been met and dividends still have been maintained.

And in no year in the history of the road, so far as it is recorded, has there been a larger increase of traffic than from 1878 to 1879. For the time that reports of traffic have been reported for the whole system worked, the tonnage-mileage and passenger-mileage, and the average rates received per ton and per passenger per mile have been:

Year.	Ton-miles.	Av. rate.	Passenger miles.	Av. rate.
1875-76.....	390,046,422	1.030	85,848,889	2.67
1876-77.....	473,837,807	0.880	95,830,515	2.67
1877.....	448,708,939	0.982	89,803,454	2.36
1878.....	548,053,707	0.848	79,684,722	2.41
1879.....	721,019,413	0.692	93,232,430	2.21

Until after 1877 the reports were for a fiscal year ending with May, and in the above five months of 1877 are included in the year 1876-77, and again in 1877.

The freight traffic last year was 31.6 per cent. greater than in 1878, 61 per cent. greater than in 1877, and 81 per cent. greater than in 1875-76. The passenger traffic was 17 per cent. greater than in 1878 (when it was the smallest ever reported for the whole of the present system), and also very nearly as large as in the year 1876-77, which included the whole of the Centennial traffic. But from the earliest year in the table the average freight rate has fallen 48 per cent. and the average passenger rate 17 per cent., and the reduction since 1878 was 18 per cent. in the freight rate—enough to make a difference of more than \$1,100,000 in the earnings. Traffic—freight traffic at least—was very heavy all the year 1879, but rates very bad on through freight east-bound more than one-half of the year—say from January till the middle of August. On the bulk of the freight in these months the average per ton per mile ranged from about 0.21 to 0.42 cent., while the present rate, which is the lowest of this year so far, is about 0.63. The difference in earnings caused by such a difference in rates is not a matter of speculation in the case of this road. It is one of the few lines that reports its through and local traffic and its east and west-bound tonnage separately; and more than one-half of its total freight traffic is east-bound through. A difference of 10 cents per 100 lbs. in the rate from Chicago to New York on last year's traffic over this road amounts to more than \$770,000, or more than a 4-per-cent. dividend. That year it was 53.7 per cent. of the total freight traffic, and it yielded just 40 per cent. of the total freight earnings.

These figures for through and local traffic in the different directions are so interesting and so rare that we present them here for the three years that they have been reported:

	1880.	Number 1878.	1877.	P.c. of total— 1879, 1878, 1877.
<b>Ton miles:</b>				
Through east.....	387,015,495	332,767,450	250,639,780	53.7 60.7 56.1
Through west.....	168,031,830	85,157,565	91,722,000	23.3 15.5 20.5
Total.....	555,047,325	417,925,015	342,361,780	77.0 76.2 76.6
Local.....	165,972,088	130,128,622	104,347,159	23.0 23.8 23.4
<b>Passenger miles:</b>				
Through east.....	16,475,692	14,867,968	15,889,800	17.7 18.7 20.0
Through west.....	14,913,692	15,190,556	16,567,992	16.0 19.1 20.7
Emigrant.....	15,770,804	7,749,508	5,943,552	16.9 9.7 7.4
Total.....	47,160,188	37,814,032	38,401,344	50.6 47.5 48.1
Local.....	46,072,242	41,870,040	41,404,110	49.4 52.5 51.9

From this it appears that there was a much greater growth of through freight east from 1877 to 1878 (33 per cent.) than from 1878 to 1879 (13.6 per cent.), and the greatest growth of freight traffic in 1879 was of through west-bound. And here it is well to caution the reader that the west-bound business of this road and the other lines or parts of lines from Buffalo to Chicago must not be considered to be the same as

trunk-line west-bound traffic. The roads from Buffalo to Chicago compete with the lakes for a large amount of coarse freights and some valuable ones, which go by propellers if the rail rates are not pretty nearly as low. The bulkiest of these freights are anthracite coal and salt. Although the lake rates for coal are rarely more than 50 cents per ton from Buffalo to Chicago, and a great part of the whole shipments are carried at 25 and 30 cents, the railroads carry a considerable amount of coal. Not all of it goes through, for much is consumed at stations on the lines, but all has to be carried at extremely low rates—very much less than the cost of moving the trains—and it is taken only because the roads have a great many cars going west empty, for which it is better to accept freight that pays a trifle than to move them without any load or any pay. It is this which explains the fact that on the Michigan Central the average rate on through freight west has been lower every year than the average on the through freight east, though trunk-line rates have been higher on west-bound freight and have been well maintained, while it is east-bound freight that has been so terribly demoralized. Just the reverse would appear in a report of a trunk-line, or other road not competing to such an extent with the lakes, and just the reverse does appear in the report of the Cleveland, Columbus, Cincinnati & Indianapolis, whose traffic is as largely through as the Michigan Central's, and which for the last three years has received one-third to one-half more on west-bound than on east-bound freight.

The Michigan Central's through west-bound freight nearly doubled from 1878 to 1879, yet in the latter year it was not half as great as the through east-bound freight. The former, as we say, was the largest item in the increase of traffic, but is hardly so important as the increase of 27½ per cent. in the local freight traffic, for the average rates on the latter are three times as great as those on west-bound freight.

The increase in the freight traffic, however, great as it is, is hardly so remarkable as the increase in passenger traffic, because we are accustomed to great increases in freight traffic in this and other roads on this country, while passenger traffic, if not stationary, has commonly grown less rather than greater. An increase of 17 per cent. would be noticeable anywhere and at any time. The increase on this road in the Centennial year was but about half as great. Examination of the above table shows it to have been largely in local traffic, but chiefly in emigrant traffic carried at very low rates. This emigrant traffic has more than doubled since 1878 and increased 165 per cent. since 1877, and has reached proportions which probably few suspect. This is a through traffic westward, and last year it was actually greater in amount than the other through travel westward. There has been of late a very large emigration from Canada, largely to Manitoba, and the Michigan Central, as the connection of the Canada roads, has received most of it. Probably very few if any other roads had so large an emigrant traffic in 1879, but with the present great influx from Europe, several may exceed it this year.

From year to year we see that the proportion of through-freight traffic has varied little from 77 per cent. of the whole. On the Cleveland, Columbus, Cincinnati & Indianapolis this traffic is about 80 per cent. of the whole; no other parallel road reports the proportion. The passenger traffic is nearly equally divided between through and local.

The great difference between through and local rates will be indicated by the difference between the proportion of the local traffic to the total traffic and the proportion of the earnings from that traffic to the total earnings. Thus in 1879 the through freight was 77 per cent. of the total freight traffic, but it earned less than 55 per cent. of the total freight earnings. The percentage of passenger and freight earnings contributed by each branch of the traffic was:

	1879.	1878.	1877.
<b>PASSENGERS.</b>			
Through east.....	17.7	17.0	18.7
Through west.....	13.0	16.2	19.1
Emigrant.....	16.9	8.3	9.7
Total through.....	50.6	41.5	47.5
Local.....	49.4	58.5	59.8
Total.....	100.0	100.0	100.0
<b>FREIGHT.</b>			
Through east.....	53.7	40.0	60.7
Through west.....	23.3	14.9	15.5
Total through.....	77.0	54.9	76.2
Local.....	23.0	45.1	23.8
Total.....	100.0	100.0	100.0

Thus, while the through-freight traffic has every year been about the same proportion of the whole—76.2 to 77 per cent.—the earnings from that traffic have varied a little more—from 53 to 56.2 per cent.—and nearly half of the freight earnings have been con-

tributed by the local freight, which is less than a quarter of the freight traffic. In passenger traffic the differences are less, and more steady. The through business has become a larger proportion of the whole, and has every year contributed a larger share of the passenger earnings.

The different rates at which these different classes of traffic have been carried have been, in cents:

	Per Passenger Mile.			Per ton per Mile.		
	1879.	1878.	1877.	1879.	1878.	1877.
Through east.....	2.12	2.31	2.08	0.515	0.509	0.702
Through west.....	2.23	2.28	2.10	0.441	0.548	0.605
Emigrant.....	1.09	1.05	0.96	.....	.....	.....
Total through.....	1.81	2.04	2.00	0.493	0.589	0.702
Local.....	2.02	2.74	2.77	1.356	1.679	1.845
Total.....	2.21	2.41	2.36	0.692	0.848	0.982

Thus the emigrant rate has constantly increased, and till last year the through passenger rate received has been nearly the same in both directions, but in 1879 was about 5 per cent. less on east-bound than on west-bound passengers. All the time the through freight rate has been less on west-bound than on east-bound traffic, from 10 to 20 per cent. less. Though the average local freight rate is kept much higher than the through rate, it has not been stationary by any means but has been reduced more in amount (though not in proportion) than the through rate. From 1877 to 1879 the average rate per ton per mile fell 0.209 cent on through and 0.489 on local freight—the latter amount being nearly the same as the whole amount of the through rate in 1879. This latter deserves to be borne in mind. It was less than half a cent per ton per mile for the whole year. As for nearly half the year the through rate in the lowest class was about 0.6 cent., varying from that to 0.8 cent., we may imagine what the average was in the other half of the year. It is to be hoped, and reasonably to be expected, that through rates so low will not occur again until after there has been a material reduction in the cost of transportation. Assuming the proportion of expenses to earnings to have been the same for both passengers and freight, the average expense per ton per mile was 0.44 cent. last year—very nearly as much as the average receipt on the through traffic.

The position of this road is somewhat peculiar among carriers of through traffic. It is the most northerly of the lines and has always commanded a very large share of the traffic to and from Chicago—more than any other road. It is, however, from its position unable to command much traffic from the country south of it and east of Chicago, as all the lines commanding much traffic from the southward or southwestward are intercepted by the Lake Shore or other lines still further south, the roads which do connect with the Michigan Central, such as the Detroit, Hillsdale & Southwestern and the Fort Wayne, Jackson & Saginaw, commanding but little traffic. On the north it is limited by the Great Lakes. Its field is thus limited chiefly to Chicago and the country beyond and the lower peninsula of Michigan. This, however, is no contemptible field. The Chicago railroads concentrate there traffic from the South and Southwest, as well as from the Northwest, and Michigan, which is pretty thoroughly penetrated by branches of this road, is by no means a fully developed state. The fact that the lower peninsula is heavily wooded has prevented the rapid agricultural development of the northern part of it. But though it does not grow like Kansas, or Minnesota, it grows, and there is now no doubt but that it will eventually and at no very distant day be fully occupied, except where the forests are pine. The latter, with the active demand for lumber which began last year, are likely to contribute earlier and to a greater extent to traffic, though when once the lumber is taken out, they may yield very little further traffic. The longest of the branches of this road, the Jackson, Lansing & Saginaw, will profit greatly by this occupation of the northern forests, and also to a considerable extent by the railroad connection with the upper peninsula now in progress.

There are, however, many rivals for the traffic of Michigan, and the opening of the Grand Trunk's line to Chicago (which will make little difference with Michigan traffic, because the Michigan part of it has long been in operation) will take from the Michigan Central the through traffic which it has hitherto exchanged with the Grand Trunk. This is not a very large amount, but it is probably considerable. The only statistics concerning it that have come to our knowledge are those for the shipments from Chicago, which have not been large enough to have much effect on the earnings of the Michigan Central. The Grand Trunk, however, has probably a large emigrant traffic from Canada, which its own road will get hereafter.



and a large excursion traffic at low rates has been done in connection with it every summer. The loss the Michigan Central by the opening of the Grand Trunk's Chicago line must not be confounded with the Grand Trunk's probable gain by that line. If the latter gets more traffic than heretofore by reason of that line, this gain will come in due proportions from all the roads leading east from Chicago. The loss special to the Michigan Central will be due to the transfer of the existing Grand Trunk traffic.

#### Fast Passenger Locomotive.

The locomotive with a single pair of driving-wheels 6 ft. 6 in. in diameter, which has recently been finished at the Baldwin Locomotive Works, has attracted so much attention that we give this week a full-page engraving of it and also a view showing the back end.

On the Pennsylvania, and some other lines, a great deal of trouble has been experienced in the fast passenger engines from the breaking of crank-pins and coupling, or parallel, rods. On receiving the order for a locomotive to make the run between New York and Philadelphia, over the Bound Brook line, in two hours, the proprietors of the Baldwin Locomotive Works determined to use but one pair of driving-wheels, and thus dispense entirely with coupling-rods. With this arrangement the weight which can be utilized for adhesion must either be very considerably less than it would be if two pairs of wheels were coupled, or else there will be an excessive load on the single pair of driving-wheels. To provide for this difficulty the engine illustrated is arranged with equalizing levers, shown in the engraving, between the driving and trailing wheels. Each lever has a fulcrum, which works in a slot and is partly shown just on the edge or periphery of the driving-wheel. Between this fulcrum and the driving-wheel a cam (not shown in the engraving) is arranged, which can be thrown down by a steam cylinder and piston, so as to form a bearing for the equalizing lever, and thus take the weight off from the fulcrum which is shown. The cam then becomes the fulcrum of the lever, and one arm of the latter is thus lengthened and the other shortened, and consequently a larger proportion of the weight of the engine then rests on the driving-wheels. It is intended that this arrangement shall be used only in starting, or on heavy grades.

The dimensions of this engine are as follows:  
Cylinders, 18 x 24 in.  
Total wheel-base, 21 ft. 1 in.  
From centre of driving to centre of trailing wheels, 8 ft.

Boiler, made of steel  $\frac{3}{8}$  in. thick.  
Diameter of boiler at smoke-box end, 52 in.  
198 tubes, 2 in. diameter x 12 ft.  $2\frac{3}{4}$  in. long.  
Fire-box, 96  $\frac{1}{2}$  in. long x 84 in. wide, 51 in. deep in front, and 44 in. back.

Grates, made of water tubes,  $1\frac{1}{4}$  in. outside diameter x  $\frac{1}{4}$  in. thick, spaced  $2\frac{3}{4}$  in. from centre to centre, with three bars arranged to pull out.

Truck has a swing bolster and four 36-in. wheels, with cast-iron centres and steel tires.  
Journals of truck axles, 5 x 8 in.

Steam-ports,  $1\frac{1}{2}$  x 16 in.  
Exhaust-ports, 3 x 16 in.  
The valve is of the Allen pattern, with  $\frac{3}{4}$  in. lap.

Cross-heads are made of solid wrought-iron, with brass gibs on slides.

Driving-wheels, 6 ft. 6 in. diameter, with cast-iron centres, having solid spokes and hollow rim.

Tires, 3 in. thick.  
Driving axles, made of wrought-iron, with journals 8 x 9  $\frac{1}{2}$  in.

Trailing wheels, 45 in. diameter, with cast-iron centre and steel tires.

Journals of trailing axle, 7  $\frac{1}{2}$  x 8  $\frac{1}{2}$  in.

Boiler supplied with two injectors. No pumps are used.

Tender carries 4,000 gallons of water.

Tender-frame made of channel iron.

Tender wheels 36 in. in diameter, with cast-iron centres and steel tires.

Tender axle journals, 5 x 8 in.

The weight of engine in working order is 85,000 lbs.

Weight on driving-wheels from 35,000, to 45,000 lbs.

Weight on trailing-wheels from 15,000 to 25,000 lbs.

Weight on truck 25,000 lbs.

The form of the fire-box is shown in the end view. The top and sides are stayed with  $\frac{3}{8}$  in. stay-bolts. The boiler has 1,400 square feet of heating surface.

The engraving also shows the extended smoke-box, which is 50 in. long, measured from the front of the tube-sheet. The arrangement of the inside of the smoke-box is somewhat different from the usual practice. In front of the tubes a sheet-iron deflector is placed, which is inclined from the top row of tubes downward and forward with an opening below its lower edge and the bottom of the smoke-box. This opening can be increased or diminished by means of a movable section attached to the deflector. The smoke-box is divided into two parts by wire netting, having 3  $\frac{1}{4}$  meshes to the inch, which is fastened to the tube-sheet just above the top row of tubes and extends horizontally forward to the front and to both sides of the smoke-box.

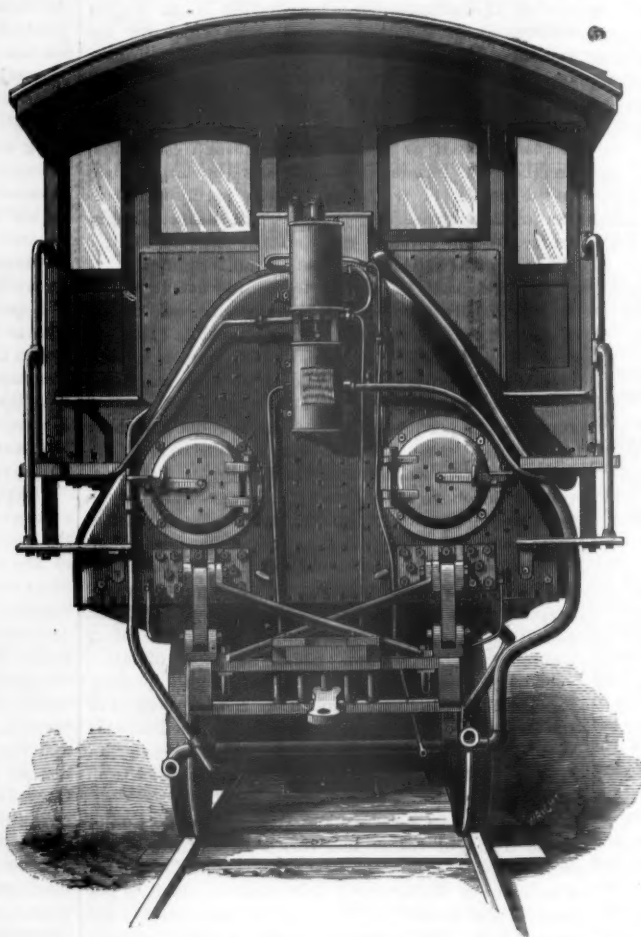
The exhaust-pipes are carried up through this netting and have a single nozzle  $4\frac{1}{2}$  in. in diameter just above it. The smoke-box can be cleaned from a hand-hole shown in the engraving on the under side of the extended smoke-box.

As considerable curiosity has been manifested regarding the working of this engine, it may be said that thus far it has been running only in an experimental way, and, as happens in all new engines, some little time is required before all the bearings work quite satisfactorily, and the boiler is thoroughly freed from grease, and the exhaust apparatus is adjusted in the most efficient way. On one trip, though, it ran, with a train of five empty passenger cars and a baggage car, from Trenton Junction to Bound Brook, a distance of 27.1 miles, in 26  $\frac{3}{4}$  minutes. In this distance there is a straight line of 13.8 miles, which was made in 11 minutes, which is at the rate of a little over 75 miles per hour. At the time, though, the engine was not steaming well, and, no doubt, it will be able to make even faster time than this.

#### Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

*Burlington & Missouri River in Nebraska.*—This company's Nebraska line has been extended from Aurora, Neb., northward to Central City, 19 miles. *The Republican Valley*



line has been extended from Orleans, Neb., westward to Arrapahoe, 37 miles.

*Chicago, Milwaukee & St. Paul.*—This Company's Davenport Line is extended from Hawkeye, Ia., northward to Ft. Atkinson, 18 miles.

This is a total of 64 miles of new railroad, making 1,160 miles thus far this year, against 408 miles reported at the same time in 1879, 807 miles in 1878, and 841 miles in 1877.

THE CINCINNATI SOUTHERN earned at the rate of \$557 per mile in the first quarter of 1880, one-half of which was in March. Considering that the road was not fully opened, and especially that its connections in the way of fast freight lines and the like were hardly made at all, this is perhaps as well as could be expected. But of course there will need to be a vast improvement in order to support the road, for it is not only a pretty costly one, but it must be supported chiefly on through traffic, which will have to be taken at comparatively low rates in competition with other railroads. Although the country on the line has very few other outlets, it is for the most part very thinly peopled and not likely to afford much traffic; at least it has not heretofore to such roads as penetrate it. There is a good deal of it, however, and should it supply one-tenth the traffic per square mile that is afforded by such a country as Illinois, for instance, it would give a very fair local traffic. As for through traffic, that has still to be developed, but in spite of the combinations made by the Louisville & Nashville, it is not likely that it can be kept out of the Southeast, though it may be put to a great disadvantage there. In spite of what has been said about the control of the Western & Atlantic, it is almost certain that this road will remain neutral, in accordance with the letter and the

spirit of the lease from the state of Georgia. This is understood to be the position of Governor Brown, the President of the lessee corporation, and probably any decided deviation from it would cause action by the state to enforce this condition of the contract. But the contracts made between the Central of Georgia and the Georgia railroads may be much more effective. Just what these are has not been made known, except that provision is made for through shipments, as though these formed one road. But it is not probable that these arrangements exclude shipments by other connections. The result may be that the two Georgia roads will have relations with the Louisville & Nashville and the Cincinnati Southern similar to the relations of the Michigan Central and the Lake Shore to the New York Central and the Erie. The latter interchanges a good deal of traffic with the Vanderbilt roads west of Buffalo, though the New York Central is their chief connection, and so the chief part of the through business of the two Georgia roads may be done by way of the Louisville & Nashville, while, at the same time, the Cincinnati Southern gets a share of it. But, at all events, the position of the Western & Atlantic is likely to secure it a good line to Atlanta, and from Atlanta it will be much easier to secure other Southern connections than from Chattanooga, though nothing could make up for a total lack of business relations with the extensive systems of the two great Georgia companies, which reach nearly all the considerable towns of the state as well as the South-Atlantic ports.

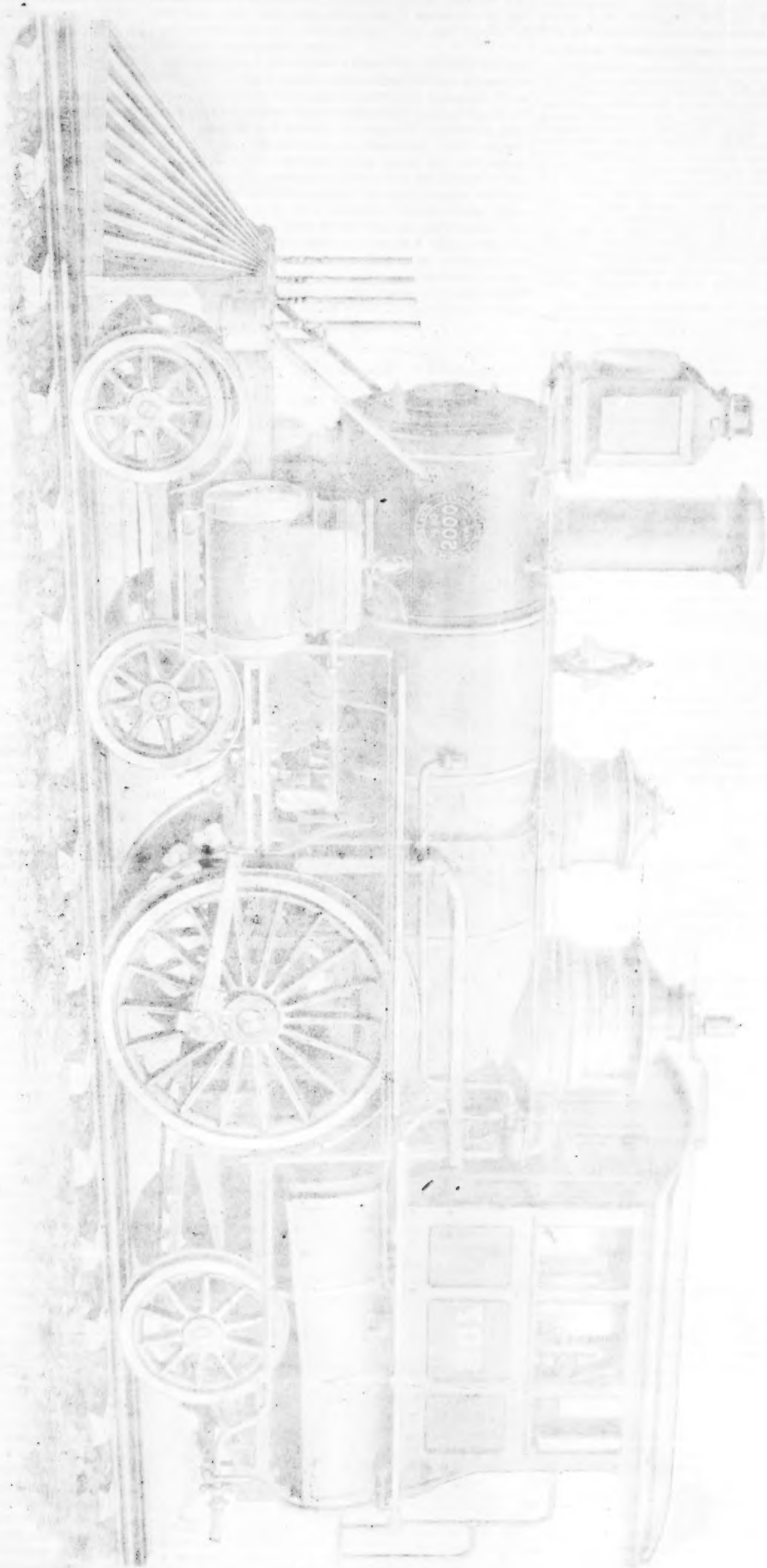
THE LAKE SHORE REPORT, an abstract of which we publish on another page, we are unable to review this week. It is an admirable presentation, not only of the facts of the year's business, but of its course for the whole ten years of its existence, and we know of no other company's report which is more generally intelligible and interesting to stockholders. The salient facts of the business of 1879 are an increase of 29.3 per cent. in freight traffic and of 6.3 per cent. in passenger traffic; an increase of 12.3 per cent. in freight earnings and of 2.7 per cent. in passenger earnings; an increase of 9.2 per cent. in gross earnings, of 5.3 per cent. in working expenses, and of 15.4 per cent. in net earnings. The gross earnings are the largest since 1874; the net earnings the largest in the history of the road. The freight traffic is much the largest the road ever had; the passenger traffic larger than in the two years next previous, but smaller than in any of the other seven years of the life of the road. The percentage of increase of traffic was a little less for freight and a great deal less for passengers than on the Michigan Central for the same year; the Lake Shore's average rate was a little lower for freight (0.642 cent per ton per mile against 0.692) and about the same for passengers. The reduction in rates from 1878 was much the greatest on the Michigan Central, however. The latter, with about two thirds the mileage of road, has 66 per cent. of the Lake Shore's passenger traffic but only 42 per cent. of its freight traffic. As in the case of the Michigan Central, the percentage of increase in freight traffic was much larger in east-bound than in west-bound freight—55.2 per cent. against 20.3—and the Lake Shore's report indicates what articles formed the chief increase: there was an enormous increase in the coal carried—nearly one half.

The report shows the number of tons of freight received and delivered by the road at each station. In view of the reports that have been published of the importance of the Wabash traffic to the Lake Shore, the Toledo receipts deserve noting.

The Lake Shore forwarded from that station (in both directions, and it carries a good deal of lumber from Toledo) 765,049 tons, which if all carried to Buffalo would have made 226,454,504 ton-miles, or about 13 per cent. of the total freight traffic of the road. Toledo, however, is the terminus of several roads besides the Wabash, though the Wabash doubtless brings it more freight than all other roads put together. From Buffalo about one fifth more, from Cleveland two and a third times as much, and from Chicago one third more freight is forwarded than from Toledo.

THE CANADA SOUTHERN illustrates most perfectly the effect of maintaining through east-bound rates. In the first half of 1879, during which these rates were utterly demoralized, its net earnings were \$59,875—not one-third of the current interest charges—in the last half of the same year, during the last three-fourths of which rates were well maintained, its net earnings were \$487,399, or more than eight times as much, and \$295,000 in excess of the current interest charges. Probably there is no other road on which so large a proportion of the traffic is through, and none, therefore, which gains relatively so much from the maintenance of through rates, as is further indicated by its increase of 64 per cent. in gross earnings in the first quarter of this year and of 95 per cent. in March last. For roads like this last year's rates mean inevitable ruin, and for all roads that carry through traffic they mean disaster. There was never anything that showed more clearly how the whole burden of supporting a railroad falls on the local traffic when through rates are so demoralized. All this time, in 1879, rates for through west-bound freight were well maintained and this road got its share of it; and yet we see that in the first half of the year its earnings were little more than enough to cover the bare working expenses.

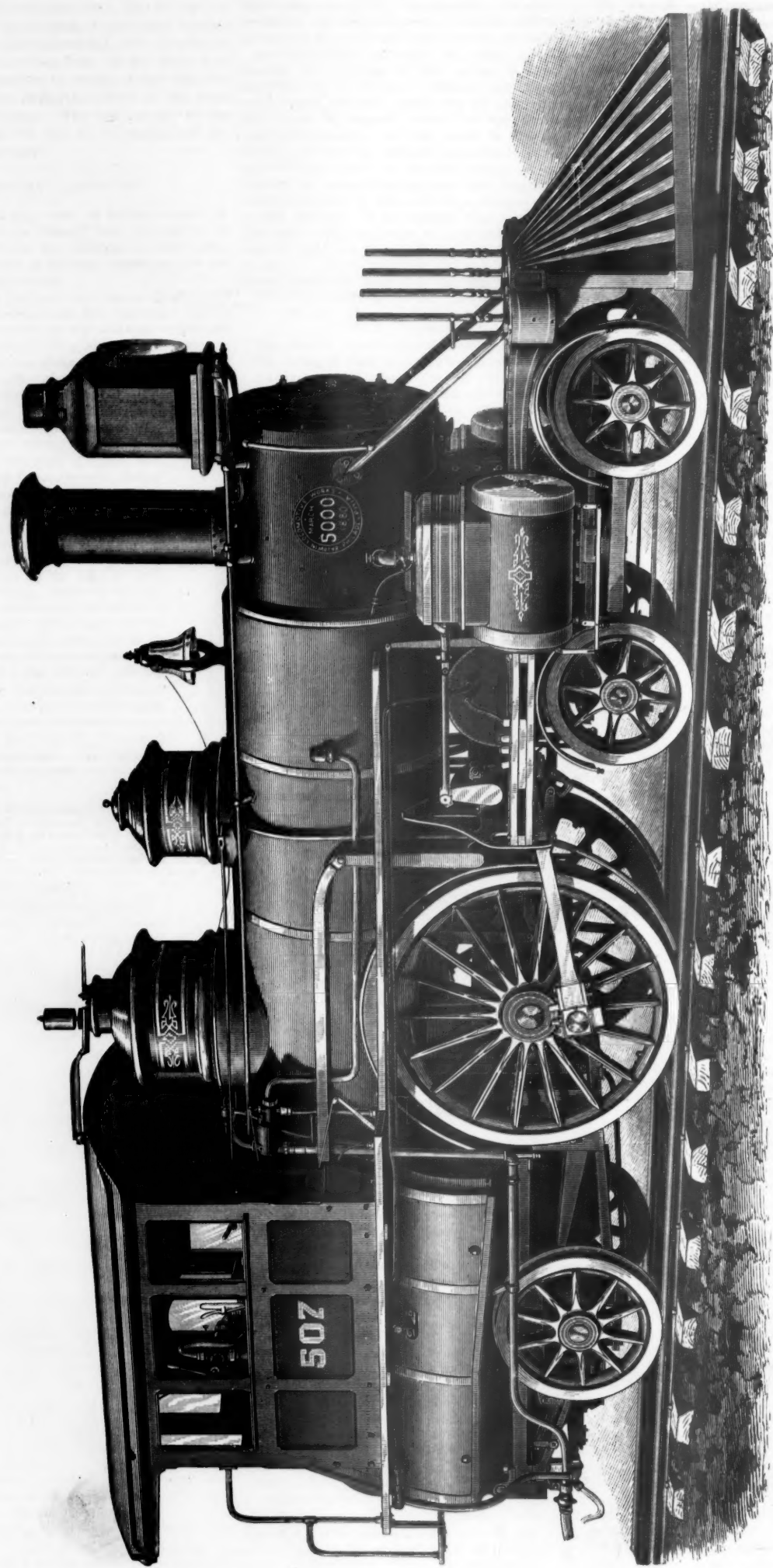




1901. LIVERPOOL, ENGLAND.

any one who has seen this engine in operation will be able to tell you that it is one of the most powerful and reliable of all the engines ever built.





FAST PASSENGER LOCOMOTIVE

*For the Bound Brook Line of the Philadelphia & Reading Railroad, between New York and Philadelphia.*

*Built by the BALDWIN LOCOMOTIVE WORKS, Philadelphia, Pa.*



THE INQUEST OF THE MADISON SQUARE GARDEN DISASTER continued during the past week. In the course of it Mr. Fayette S. Curtis, who testified that he had been a civil engineer fifteen years and Engineer of the Harlem Railroad ten years, swore that he made the plans and specifications for the work, including the roof that fell; that his plans and specifications called for a tie-beam of one solid 6x8 in. timber, and that it was these plans which the Building Department approved; that the contractors objecting that so long a timber was hard to get, and proposing to make one by splicing three-inch timbers together, he, the Engineer, consented to the change (making the truss as figured in these columns last week), and that this modification of the plans was not submitted to the Building Department for approval. Mr. Curtis said that he supposed that larger spikes would be used in splicing together the timbers which formed the tie-beam than the nails which were actually used.

WATER RATES have changed but little during the past week. Lake rates were at one time reported  $\frac{1}{4}$  cent lower, but since Sunday they have been as much higher, instead— $3\frac{1}{4}$  cents per bushel for corn and  $3\frac{1}{4}$  for wheat from Chicago and Milwaukee to Buffalo. Canal rates are a trifle lower, and quotations are  $5\frac{1}{2}$  cents for corn and  $5\frac{1}{2}$  for wheat. Ocean rates are nearly the same, and are now quoted at 4d. to  $4\frac{1}{4}$ d. per bushel for grain by steamer from New York to Liverpool.

#### NEW PUBLICATIONS.

*Lawson on Carriers' Contracts.*—A Treatise on the Contracts of Common Carriers, with special reference to such as seek to limit their liability at common law, by means of bills of lading, express receipts, railroad tickets, baggage checks, etc. By John D. Lawson, Editor *Central Law Journal*. Published by William H. Stevenson, St. Louis. One volume, octavo, 500 pp.

This work embraces a limited but very important branch of the law applicable to railroad traffic. The antiquated rule of the common law requiring common carriers of merchandise to assume all risks, except of losses caused by the act of God or of the public enemy, is, practically, everywhere relaxed so far as railroads are concerned. Independent of notice or contract, the courts have engrafted important limitations upon the liability. Thus it is well understood that the carrier does not assume risk of loss caused by the inherent defect or natural decay of the thing carried; and it may be a good defense in his behalf to show that the loss is attributable to any act or omission on the part of the owner of the goods, or that the goods have been taken from the carrier by legal process. Above and beyond these just limitations, overlooked by the phraseology of the old rule, are a multitude which modern practice allows the carrier to incorporate in his contracts. The grounds and extent of the carrier's privilege of proposing such limitations; the necessity of the customer's assent; the risks and perils which are usually thus protected; the clauses and phrases commonly employed, and the doctrine of the courts in construing and enforcing them, are the leading subjects of Mr. Lawson's work.

The volume opens with an exposition of the liabilities of common carriers, independent of special contract. The ancient rule is stated and criticized; and the necessary and proper exceptions which modern courts have recognized are explained.

The next topic is the power of common carriers to limit their liability. The history of that relaxation of the common law which permits them in some few jurisdictions by notice, in others by special contract to which the customer must assent, to limit their liability is explained. Upon a review of the course of decisions in all the states, Mr. Lawson declares the general American doctrine to be that a common carrier has two distinct liabilities: 1, for losses without his fault, in respect to which he is liable by the common law as an insurer; and 2, for losses attributable to default or negligence, in respect to which he is liable on the same ground as an ordinary bailee. He may limit his responsibility as an insurer, by special contract; but he cannot by any contract exempt himself from responsibility for the consequences of his own negligence, or of negligence of his servant or agent. Contracts of this kind are disallowed because contrary to public policy, and usually obtained under circumstances which give to the carrier an undue advantage in obtaining the customer's assent. This is a statement of the prevailing American rule, though not applicable in Iowa, New York, Texas and West Virginia, nor fully recognized and admitted in the United States courts.

After exhibiting what has been said in leading cases in favor of or against the policy of allowing a limited liability, the effect of mere notices is considered, and the extent to which a carrier's notice independent of a customer's assent may protect him is explained. The doctrine of contracts limiting liability is then presented. Negligence, deviation, delay, and similar causes of loss distinctly attributable to the carrier's fault are shown not to be, in general, within such contracts. The interpretation of the usual clauses largely occupies this portion of the work. The decisions of the courts upon the familiar phrases in railroad receipts and contracts—what is meant by "baggage," by "C. O. D.," "dangers of navigation," "perils of the lake," river or seas; "feed and water" applied to live stock; "good order and condition;" "inevitable accident;" "leakage and breakage;" "owner's risk;" "place of destination;" "privilege of re-shipping," and a multitude of others, are collated and explained. The necessity of a special consideration to the customer for granting assent to a limitation is the subject of the next chapter. How far these limitations may be agreed upon by agents of the parties, and how far connecting carriers are responsible

for each other's stipulations, are next treated; and the volume closes with topics more immediately attractive to the legal profession than to railroad men, viz., the burden of proof, and "unreported cases."

The character of the volume is that of the ordinary modern law treatise. It is founded on the adjudications, appears to collate them extensively and faithfully, to represent them fairly and generalize their results with a good degree of sound judgment and ability. It does not contribute anything original or important to the literature of the subject. We do not observe throughout its pages any indications that its author has personal experience in this branch of the law, even that which is acquired by a practitioner who has made cases arising in it a specialty. It collects and gives what an intelligent reader of the decisions might gather. As a manual of the decided cases upon modern limitations of a carrier's responsibility, it will doubtless be serviceable to the bar, and it may also be a convenient hand-book in the offices of carrying companies, expresses, railroads, steamboat, ticket agents and others whom the questions discussed practically and immediately concern.

### General Railroad News.

#### MEETINGS AND ANNOUNCEMENTS.

##### Meetings.

Meetings will be held as follows:  
*Springfield & Northeastern*, annual meeting, at the Chapin National Bank in Springfield, Mass., May 21, at 11 a. m.  
*Chicago, Milwaukee & St. Paul*, annual meeting, at the office in Milwaukee, Wis., June 5, at noon. Transfer books close May 17.

##### Annual Conventions.

Meetings of various railroad and engineering associations will be held as follows:  
The *Master Mechanics' Association* will hold its thirteenth annual convention in Cleveland, O., beginning Tuesday, May 11. N. E. Chapman, Chairman Committee of Arrangements.  
The *American Society of Civil Engineers* will hold its annual convention in St. Louis, Mo., beginning Tuesday, May 25. T. J. Whitman, Secretary Local Committee, St. Louis.  
The *Passenger Conductors' Life Insurance Company of the United States* will hold its ninth annual convention at the Maxwell House, in Nashville, Tenn., beginning May 31.  
The *Master Car-Builders' Association* will hold its fourteenth annual convention in Detroit, Mich., beginning Tuesday, June 8.

##### Dividends.

Dividends have been declared as follows:  
*New York, Providence & Boston*, 2 per cent., quarterly, payable May 10.  
*Pullman Palace Car Co.*, 2 per cent., quarterly, payable May 15.  
*Nashua & Lowell*, 3 per cent., semi-annual, payable May 1.  
*Cincinnati, Sandusky & Cleveland*, 3 per cent., semi-annual, on preferred stock, payable May 1.

##### Foreclosure Sales.

The *Savannah & Memphis* road was sold in Opelika, Ala., May 3, under foreclosure of mortgage, and bought for \$834,500 by Arthur B. Graves and associates, of New York. The road is completed from Opelika to Goodwater, 60 miles. By the latest published statement the funded debt was \$2,137,000, the floating debt about \$183,000, and the stock \$2,332,000. A meeting of bondholders was to be held this week. Later dispatches say that the purchasers did not comply with the conditions of sale, and the road will be re-sold after 30 days' notice.

##### Southwestern Railway Association.

At the meeting in St. Louis, April 28, Mr. A. A. Talmage presided, and Commissioner Midgley acted as Secretary. A communication was received from the Presidents of the Chicago & Alton, the Missouri Pacific and the Wabash, St. Louis & Pacific stating that an agreement had been made that on all business from points west of the Missouri River the sum of two locals shall be billed through to St. Louis. In accordance with this agreement a resolution was passed restoring rates, on and after May 1, on all business to and from Missouri River points. These rates are made on the basis of wheat, 25 cents; corn and other grain, 20 cents, on business between Kansas City and Chicago.

Messrs. McMullin, Cable, Potter, Talmage and Carson, composing the committee appointed to agree upon lumber percentages, reported that they were unable to agree. The committee was discharged, and the matter referred to Mr. McMullin and Commissioner Midgley. The new committee retired and soon returned with percentages on lumber traffic from Chicago to Missouri River points, which were adopted with but little discussion.

But little routine business being on hand, the Association adjourned to meet in Chicago, May 6.

##### The Civil Engineers' Club of the Northwest and the Metric System.

The following circular to members of this club has been issued by Mr. Charles Latimer:

"It has come to the knowledge of the undersigned that the Executive Committee of the Civil Engineers' Club of the Northwest has decided to have a vote on the resolutions offered by Mr. Greeley on the 6th of May, 1879, indorsing the metric system and urging upon Congress, in the name of the club, the desirability of passing the act, now before Congress, requiring the use of the metric denominations of weight and measure in the custom-houses of the United States. "It is to be hoped that the members of the club will respond to this request—either in person or by letter ballot—and that when the vote is taken it will be the voice of all the members and not that of a few interested ones, as was the case in a parallel instance in Boston, where the vote of eight out of a membership of 80 was put forth as the voice of the society. A full vote is desirable for other reasons, whether the members are familiar with the subject or not. Those who have given the matter but little attention will do well to vote in the negative, for it is generally safe to 'leave well enough alone'; besides, more important interests are involved in this question than the majority of persons are aware of. Any forced change in our present standards of weights and measures must inevitably tend to confusion and disaster. The engineers of the West cannot afford to be a party, either directly or indirectly, to urge a movement tending to such a condition of affairs. I again, therefore, express the hope that all members will vote; and that those not thoroughly acquainted with the questions involved—which are not those of a mere matter of a decimal system of weights and measures,

as its advocates would have us believe, but the French metric system, pure and simple—will not fail to vote in the negative, and they will never have cause to regret it."

##### Stock Transportation—Cruelty to Animals.

A meeting of general freight agents was held in Chicago, April 29, in conjunction with the representatives of the Illinois Humane Society and the Chicago packers. A circular had been addressed to the General Freight Agents of the several Western roads, complaining of the inhuman and barbarous practice of using iron spikes or brads in driving hogs and cattle at the different railroad stations, whereby not only unnecessary pain was inflicted upon the animals, but great damages were sustained by loss of commercial value. The circular, which was signed by the leading packers in the city, asked that the railroad companies co-operate with the officers of the Illinois Humane Society, and issue instructions to the local agents along the line of each railroad asking that the use of these spikes be discontinued. These spikes are about three inches in length, added to which is a hook of the same size. These instruments are stuck into the animals, gouging out the flesh. The loss sustained by the trade from their use is several hundred thousand dollars on pork hams alone.

There were present Messrs. W. G. Swan, of the Chicago, Milwaukee & St. Paul; G. A. Kimball, Chicago, Rock Island & Pacific; C. G. Eddy, Chicago & Northwestern; Horace Tucker, Illinois Central; John G. Shortall, President of the Humane Society; Edwin Lee Brown, National Humane Society, and Mr. George J. Brine, of Armour & Co. The meeting was informal, no chairman being chosen.

Messrs. Shortall and Brown described the instruments of torture, and spoke of the results arising from their use. The railroad gentlemen admitted that the instruments were generally employed, but stated that they were anxious to suppress their use, and were ready to aid in bringing about a favorable change. Some remarks were made complaining that Governor Cullom retained the present State Agent at the stock yards, when he was considered incompetent. The following circular was then agreed upon:

"To Agents and Connections:  
"It has been demonstrated to us by the packers and commission merchants doing business at the Union Stock Yards, in the City of Chicago, that great damage and commercial loss results from the use of spikes and brads in driving hogs and cattle while loading cars and otherwise. The Illinois Humane Society has also called our attention to the violation of the laws on this subject, and has, together with the business men interested in the suppression of this barbarous practice, requested our energetic assistance and co-operation in stopping it.

"We therefore request you, for commercial as well as humane reasons, to use your best endeavors toward convincing shippers and loaders that this practice is wrong, and must be stopped. The law provides the following penalty for violation of the statute on this subject: 'A penalty of \$100 for each violation thereof'—to be recovered before any justice of the peace.

"You will also call attention to the following agreement: 'That from and after the 15th of May next, we will buy hogs only subject to a deduction of 25 cents for each ham found to have been bruised by the use of spikes or brads. (Signed) Armour & Co., H. Botsford & Co., Davies, Atkinson & Co., S. A. Ricker, Chapin & Cudahy, B. F. Murphy Packing Co., G. W. Higgins & Co., Allerton Packing Co., Jones & Stiles, John Craig Hatley, L. B. Doud & Co., Moran, Heeney & Co., Chicago Packing & Provision Co., Anglo-American Packing & Provision Co., Teufel, Son & Co.'

The meeting then adjourned. Afterward the agreement was circulated and the following signatures were obtained: Horace Tucker, Illinois Central; Charles G. Eddy, Chicago & Northwestern; W. M. Sage, Chicago, Rock Island & Pacific; James Smith, Chicago & Alton; Robert Forsythe, Chicago & Eastern Illinois; W. G. Swan, Chicago, Milwaukee & St. Paul; E. P. Ripley, Chicago, Burlington & Quincy.

#### ELECTIONS AND APPOINTMENTS.

*Allegheny Valley.*—The new board met April 29, and re-elected John Scott, President; E. H. Utley, Secretary; Thomas R. Robinson, Treasurer.

*Atlantic & Pacific Telegraph.*—At the annual meeting in New York, last week, the following trustees were chosen: James H. Banker, S. F. Bargar, A. B. Chandler, Chauncey M. Depew, Harrison Durkee, Norvin Green, Wilson G. Hunt, Edwin D. Morgan, John H. Mortimer, R. H. Rochester, Augustus Schell, W. J. Syme, Hamilton McK. Twombly, Henry M. Taber, John Van Horne. The new board organized by choosing the following officers: President, A. B. Chandler; Vice-Presidents, John Van Horne, John H. Mortimer; Secretary, William H. Baker; Treasurer, Edward B. Fowler.

*Augusta & Knoxville.*—Mr. Eugene F. Verdery, of Augusta, Ga., has been chosen President.

*Baltimore & Ohio.*—Mr. T. H. Dearborn has been appointed General Northwestern Passenger Agent, with office at No. 83 Clark street, Chicago.

*Baltimore & Ohio Leased Lines.*—At annual meetings in Pittsburgh, May 3, the following were chosen: *Brownsville & New Haven.*—President, Charles Donnelly; Directors, W. J. Kline, Welty McCullough, A. L. McFarlane, W. Markle, A. O. Tinsman, George W. Wilson. *Somerset & Cambria.*—President, Charles Donnelly; Directors, J. G. Harvey, Robert Garrett, W. H. Koontz, Welty McCullough, Daniel J. Morrell, C. C. Musselman.

*Canadian Pacific.*—Mr. T. J. Lynskey has been appointed Superintendent of the Pembina Division, from St. Vincent to Winnipeg. He was formerly on the Grand Trunk, afterward on the Great Western, and more recently Superintendent of the Western Counties road in Nova Scotia.

*Catawissa.*—At the annual meeting in Philadelphia, May 3, the following were chosen: President, M. P. Hutchinson; Directors, Geo. C. Carson, John S. Graham, Joseph C. Harris, F. K. Shipper, Emmor Weaver, I. V. Williamson. The road is leased to the Philadelphia & Reading.

*Chicago & Alton.*—Mr. William Wilson has been appointed Superintendent of Machinery in place of Mr. A. A. Ackery, who has held the position temporarily since the resignation of Mr. Jackman. Mr. Wilson was formerly on the Chicago, Burlington & Quincy, and for some time past has been Master Mechanic of the Ohio & Indiana Division of the Wabash, St. Louis & Pacific. He has an excellent reputation as a capable mechanic.

*Chicago, Burlington & Quincy.*—Mr. George Tyson, formerly General Auditor, is now Comptroller, with office in Boston. Mr. J. L. Lathrop, for some time Mr. Tyson's assistant, is now General Auditor, with office in Chicago.

*Columbus & Toledo.*—Mr. F. H. Medary has been chosen Secretary and Treasurer, in place of Mr. James A. Wilcox, who remains with the company as Solicitor.

*Dent & Phelps.*—The following were elected at the recent



annual meeting: President, H. A. Crawford; Vice-President, E. B. Sankey; Directors, H. C. Sankey, E. L. Foote, A. H. Foote. The road is a branch of the St. Louis, Salem & Little Rock.

**Eastern, in New Hampshire.**—At the annual meeting in Portsmouth, N. H., May 4, the following directors were chosen: Edward A. Abbot, Moody Currier, Edward L. Giddings, Wm. A. Goodwin, Frank A. Philbrick, Dexter Richards, Francis Thompson. The board elected Moody Currier President; Wm. H. Hackett, Clerk; Edward A. Abbot, Treasurer. The road is leased to the Eastern Railroad Company, of Massachusetts.

**Empire Line.**—Mr. George W. Ristine has been appointed Manager and General Freight Agent, with office in Cleveland, O. He succeeds as Manager Mr. J. McC. Creighton, who was recently appointed General Freight Agent of the Pennsylvania Railroad.

**Galena & Wisconsin.**—At a meeting held in Galena, Ill., April 29, the following directors were chosen: F. Stahl, C. C. Wheeler, Albert Keep, Marvin Hughitt, M. M. Kirkman. The board elected Albert Keep President; Marvin Hughitt, Vice-President; T. P. Redfield, Secretary; M. M. Kirkman, Treasurer. The new officers are all connected with the Chicago & Northwestern Company, which now owns this road.

**Indianapolis & Vincennes.**—Mr. J. J. Turner is appointed Superintendent in place of E. W. McKenna, who has gone to the Jeffersonville, Madison & Indianapolis road.

**Jeffersonville, Madison & Indianapolis.**—Mr. E. W. McKenna has been appointed Superintendent, in place of J. R. Shaler, who goes to the Louisville & Nashville. Mr. McKenna has been for several years Superintendent of the Indianapolis & Vincennes road, where he has made himself a very good record.

**Lake Shore & Michigan Southern.**—At the annual meeting in Cleveland, May 5, the following directors were elected: Albert Keep, Chicago; Henry B. Payne, Amasa Stone, Cleveland, O.; Charles M. Reed, Wm. L. Scott, Erie, Pa.; Russel Brown, Warren, Pa.; Samuel F. Barger, John E. Burrill, D. O. Mills, Augustus Schell, Wm. H. Vanderbilt, Wm. K. Vanderbilt, Cornelius Vanderbilt, New York. The board re-elected Wm. H. Vanderbilt, President; Augustus Schell, Vice-President; E. D. Worcester, Secretary and Treasurer; John Newell, General Manager.

**Little Rock, Mississippi River & Texas.**—The following officers have been chosen for the ensuing year: President, J. E. Redfield; Secretary, J. A. Woodson; Treasurer, G. S. Daniels; Executive Committee, J. E. Redfield, E. W. Winchester, John H. Reed, Elisha Atkins.

**Louisville & Nashville.**—Gen. E. P. Alexander has been chosen Vice-President, in place of Mr. H. Victor Newcomb, recently elected President.

The following circular is dated May 1, and covers both the Louisville & Nashville and the Nashville, Chattanooga & St. Louis roads:

"Mr. J. R. Shaler is hereby appointed Assistant General Manager of these lines. Appointment to take effect this day. He will have direct charge of the Transportation Department; the Resident Engineer, Superintendent of Machinery, Purchasing Agent, Stationary Supply Agent, and the General Superintendents will report direct to him."

Mr. Shaler was for several years Division Superintendent on the Pittsburgh, Cincinnati & St. Louis, and for some time past Superintendent of the Jeffersonville, Madison & Indianapolis road.

The following is the official announcement of an appointment we have already noted:

"Mr. Edward B. Stahlman is hereby appointed Traffic Manager of all lines owned, operated and controlled by these companies (Louisville & Nashville and Nashville, Chattanooga & St. Louis). He will have charge of the commercial departments, viz., freight, passenger, and express. All officers connected with these departments will report to him. In negotiations with connecting or competing lines, affecting the general traffic, he is fully authorized and empowered to act for the above companies."

Mr. Stahlman has been General Freight Agent of the Louisville & Nashville for some time, and has made himself a reputation as an able and energetic manager in his department.

The following additional circular is dated April 26:

"In addition to his duties as Superintendent of the Pensacola and Pensacola & Selma railroads, Mr. W. D. Chipley is hereby appointed Superintendent of the Selma & Montgomery Railroad. Appointment to take effect May 1, next."

The Selma & Montgomery road is the section of the Western Railroad of Alabama, from Montgomery to Selma, 50 miles, which the Louisville & Nashville lately leased.

**Louisville, New Albany & Chicago.**—Mr. H. W. Barclay has been appointed General Agent, and will have charge of the Louisville office.

**Maine Central.**—The new board has elected George E. B. Jackson, President, and Josiah H. Drummond, Clerk.

**Manchester & Keene.**—Mr. George A. Ramsdell, of Nashua, N. H., has been appointed Receiver.

**Marietta & Cincinnati.**—Mr. Thomas P. Barry has been appointed General Passenger Agent. He has been for several years Western Passenger Agent of the Baltimore & Ohio.

**Mechanicsville & Ft. Edward.**—The directors of this new company are: Isaac V. Baker, Comstock's Landing, N. Y.; E. F. Bullard, Theodore Voorhees, Troy, N. Y.; Charles D. Hammond, Henry F. Marcy, J. White Sprong, Charles W. Wentz, Albany, N. Y.; Coe F. Young, Honesdale, Pa.; George L. Haight, James C. Hart, James Roosevelt, N. Y. It is controlled by the Delaware & Hudson Canal Company.

**New York, Lake Erie & Western.**—Mr. L. T. Stanley has been appointed General Western Passenger Agent, with office in Chicago, to succeed Mr. B. M. Arms, resigned.

**Pennsylvania.**—In Philadelphia, May 5, the board elected George B. Roberts (now First Vice-President), President, in place of Thomas A. Scott, the change to take effect June 1. No other appointments were made.

Mr. Roberts has passed nearly the whole of his active life in the company's service, and has risen gradually through various positions to the head. He has been thoroughly trained under Presidents Thomson and Scott, and is not likely to make any changes in the company's policy.

**Pennsylvania Company.**—The following circular from the Pennsylvania Company, lessee, is dated April 23:

"E. W. McKenna is appointed Superintendent of the Jeffersonville, Madison & Indianapolis railroad, succeeding J. R. Shaler, resigned."

"James J. Turner is appointed Superintendent of the Indianapolis & Vincennes Railroad, in place of E. W. McKenna, transferred."

"To take effect May 1, 1880."

**Pennsylvania Leased Lines.**—At meetings held in Phila-

delphia, May 3, the following were chosen: **Chartiers Valley.**—President, G. B. Roberts; Directors, Josiah Bacon, Alexander Biddle, J. N. DuBarry, Samuel M. Felton, Strickland Kneass, Wistar Morris; Secretary and Treasurer, James R. McClure. **East Brandywine & Waynesburg.**—President, John Cornog; Directors, Josiah Bacon, Amos Diller, J. N. DuBarry, S. M. Felton, Benjamin F. Kinzer, James R. McClure, Strickland Kneass, Wistar Morris, Wm. Morton, G. B. Roberts, Edmund Smith, T. M. Storb; Secretary and Treasurer, James R. McClure. **Louisburg & Tyrone.**—President, Strickland Kneass; Directors, James B. Coburn, Wistar Morris, G. B. Roberts, Eli Slifer, Edmund Smith, S. C. Stewart; Secretary and Treasurer, James R. McClure. **Pomeroy & State Line.**—President, Strickland Kneass; Directors, J. N. DuBarry, Wistar Morris, G. B. Roberts, N. Parker Shortridge, Edmund Smith, J. P. Wetherill; Secretary and Treasurer, James R. McClure.

**Pittsburgh & Western.**—At the annual meeting in Pittsburgh, May 3, the following directors were chosen: A. M. Brown, J. S. Brown, James Callery, George Chalfant, John Chalfant, Charles Gibson, Campbell Herron, D. Irwin, A. M. Marshall, C. S. Passavant.

**Quincy, Missouri & Pacific.**—At the annual meeting in West Quincy, Mo., April 28, the following directors were chosen: C. H. Bull, Frank Ferris, Amos Greene, W. B. Larkworthy, E. M. Miller, Henry Root, J. F. Sawyer, John Wheeler, Quincy, Ill.; Charles Ridgely, Springfield, Ill.; Solon Humphreys, New York.

**Vicksburg & Meridian.**—At the annual meeting in Vicksburg, Miss., May 3, the following new members were added to the board: George S. Obeas, Macon, Ga.; Frederick Wolfe, Montgomery, Ala.; E. Richardson, Jackson, Miss. Mr. Wolfe is Financial Manager of the Alabama Great Southern, and Mr. Richardson is a director of the Vicksburg, Shreveport & Pacific. The board re-elected Thomas Rigby, of Vicksburg, President.

**Wabash, St. Louis & Pacific.**—Mr. George H. Daniels has been appointed General Ticket Agent in place of C. K. Lord, who has gone to the Baltimore & Ohio. Mr. Daniels has been for some time General Freight and Ticket Agent of the Chicago & Pacific road. He has also been Secretary of the Western Association of General Passenger Agents, and has made himself known as an active and energetic officer, and a young man of much promise.

## PERSONAL.

—Mr. S. S. Morris, Chief Train Dispatcher of the Missouri, Kansas & Texas road was married in Indianapolis, April 28, to Miss Flora S. Detrick, of that city.

—Mr. James M. Lunt, for five years past Superintendent of the Portland & Rochester road, has resigned, and will, it is said, accept a position on a New York road.

—Mr. Max Hjortberg, Consulting Engineer of the Chicago, Burlington & Quincy road, and a member of the Lincoln Park Board in Chicago, while examining the site of the new Pullman Car Works in Chicago from the Illinois Central track, on April 27, was struck by the engine of a passing passenger train and seriously injured, his right leg and several ribs being broken. At latest accounts he was suffering much pain, but was doing as well as could be expected and in no immediate danger.

—Major L. J. Fleming died in Jackson, Tenn., April 28. He was born in Virginia, and at an early age became a civil engineer. After several years of practice and service on railroads in North and South Carolina, he finally became connected with the Mobile & Ohio and remained on that road 17 years, much of the time as Chief Engineer and finally as Resident and Consulting Engineer. After two years in the last-named position he retired altogether about four years ago. He leaves one son, Cecil Fleming, now Assistant General Superintendent of the road on which his father spent so many years.

—Mr. John Richards, widely known as an inventor and manufacturer of wood-working machinery, and a writer on technical subjects (being a frequent contributor to *Engineering*), was reported to have been lost overboard in crossing the Irish Channel from Dublin to Holyhead, January 23. He was first connected with the Ohio Tool Company at Columbus, O., afterward with J. A. Fay & Co., of Cincinnati, and later, founded an establishment in Philadelphia and one in Manchester, England. For several years he had lived most of the time in England. We understand, however, that Mr. Richards has lately been found by friends in San Francisco, in a partially deranged state, and entirely unable to explain how he came there.

—Gen. E. P. Alexander, who leaves the Presidency of the Georgia Railroad to become Vice-President of the Louisville & Nashville, is an excellent example of the best modern type of railroad managers—starting with a basis of superior character and ability, thoroughly and solidly educated, and then trained by constant service in an administrative capacity. He graduated at West Point, and was for a short time an officer of the Corps of Engineers. Serving in the Confederate army during the war, he rose to the position of Chief of Artillery on General Lee's staff. After the war, for a short time, he was a professor in the University of South Carolina, and then began his railroad service as Superintendent of the Charlotte, Columbia & Augusta Railroad—a pretty high position to begin in. Then, for a time, he was on the Savannah & Memphis, and when the Western Railroad of Alabama was acquired jointly by the two great competing Georgia corporations, the Central and the Georgia, he was mutually agreed upon for the General Manager of that line—a very high indorsement of his qualities and character. Two years ago, when Hon. John P. King, after 36 years of service, was defeated as a candidate for reelection as President of the Georgia Railroad, General Alexander was chosen as his successor. His experience for 12 years has been chiefly as an operating officer, and he has exercised great care in the direction of the transportation department. On the Louisville & Nashville, under the presidency of Mr. Victor Newcomb, he will hold something like the position that Mr. Albert Fink held under Mr. Newcomb's father, except that Mr. Fink was General Manager as well as Vice-President, while the road now has a separate General Manager in the person of Mr. De Funiak, who is thoroughly an expert in the operating department.

## TRAFFIC AND EARNINGS.

### Coal Movement.

Coal tonnages for the week ending April 24 are reported as follows:

	1880.	1879.	Inc. or Dec.	P. c.
Anthracite.....	304,774	405,290	D. 100,516	20.3
Semi-bituminous.....	81,733	75,293	I. 6,440	8.5
Bituminous, Penna.....	32,349	32,342	I. 30,207	93.5
Coke, Pennsylvania.....	44,444	13,947	I. 30,497	218.7

Anthracite production, after gaining for several weeks, has taken a turn, and is diminishing pretty fast. Full production, however, was to have been resumed this week. Bituminous tonnage continues to show a large gain.

### Railroad Earnings.

Earnings for various periods are reported as follows:

Four Months ending April 30:				
	1880.	1879.	Inc. or Dec.	P. c.
Chi. & Eastern Ill.	\$327,098	\$256,575	I.	\$71,523 27.7
St. L., Iron Mt. & So.	1,901,039	1,344,533	I.	556,506 41.4
Three months ending March 31:				
At. Miss. & Ohio	\$494,244	\$364,147	I.	\$130,097 35.7
Cincinnati South-ern.	183,665	.....	.....	.....
Central Iowa.	225,800	157,706	I.	68,094 43.2
Del. & Hudson Canal, leased lines.	1,161,682	889,006	I.	272,676 30.5
Net earnings.	506,545	325,822	I.	180,723 55.4
Eastern.	616,000	504,853	I.	111,147 22.1
Houston & Texas Central.	829,577	715,007	I.	114,570 16.9
Net earnings.	348,481	264,217	I.	84,264 31.9
Louisville, New Albany & Chicago.	179,392	129,968	I.	49,424 38.0
Pitts., Titusville & Buff.	111,893	.....	.....	.....
Net earnings.	48,215	32,810	I.	15,405 47.0
Two months ending Feb. 29:				
Grand Trunk.	\$315,630	\$219,185	I.	\$96,445 44.4
Net earnings.	83,146	50,094	I.	33,052 66.2
Month of February:				
St. John & Maine.	\$7,207	\$8,495	D.	\$1,288 19.2
Net earnings.	599	2,583	D.	1,984 76.3
Month of March:				
Albany & Susquehanna.	\$117,030	\$94,436	I.	\$22,594 23.9
At. Miss. & Ohio.	175,420	132,802	I.	42,618 32.1
Central Iowa.	89,581	54,506	I.	35,075 64.4
Cincinnati South-ern.	90,750	.....	.....	.....
Del. & Hudson, Penn. Div.	103,095	96,547	I.	6,548 6.8
Great Western.	409,600	330,200	I.	79,400 24.0
Net earnings.	173,800	94,300	I.	79,500 84.3
Houston & Texas Central.	237,745	212,946	I.	24,799 11.6
Louisville, New Albany & Chicago.	70,436	49,224	I.	21,212 43.1
N. Y. & Canada.	65,471	32,179	I.	33,292 103.4
N. Y., Pa., & Ohio.	438,841	341,824	I.	97,017 28.4
Rensselaer & Saratoga.	156,559	96,741	I.	59,818 61.9
Month of April:				
Chi. & Eastern Ill.	\$83,689	\$60,090	I.	\$23,599 37.2
St. L., Iron Mt. & So.	403,300	318,196	I.	85,104 26.7
Third week in April:				
Chi. & Eastern Ill.	\$21,934	\$15,707	I.	\$6,227 39.7
Chi. & Northwest-ern.	241,178	223,833	I.	17,345 7.8
Flint & Pere Marquette.	30,698	25,296	I.	5,402 21.0
Minn. & St. Louis.	7,244	7,524	D.	280 3.7
St. L., Iron Mt. & So.	109,330	85,038	I.	24,292 28.5
Week ending April 24:				
Grand Trunk.	\$182,546	\$158,095	I.	\$24,451 15.5

### Grain Movement.

Receipts and shipments of grain of all kinds at the eight reporting Northwestern markets, and receipts of the seven Atlantic ports, in the week ending April 24 have been, in bushels, for the past seven years:

Northwestern shipments.				
Year.	Northwestern receipts.	Total.	By rail.	By water.
1874.....	3,252,106	2,532,989	1,463,849	58.0
1875.....	3,392,287	1,677,110	1,616,449	96.0
1876.....	3,210,437	3,707,487	2,072,946	56.0
1877.....	3,002,595	3,082,417	1,303,754	33.4
1878.....	3,488,560	3,034,035	904,549	29.8
1879.....	3,426,327	3,017,055	.....	100.0
1880.....	2,912,130	3,984,877	1,181,904	29.7

The receipts of the Northwestern markets are the smallest for 53 weeks, but not much smaller than in the preceding week. The shipments of these markets were a trifle larger than in the preceding week, but were smaller than in any spring week after navigation opened last year. The rail shipments were small in amount, but a very considerable proportion of the whole. The receipts of Atlantic ports were a seventh less than the week before and the smallest for six weeks, but exceeded but once in a corresponding week of previous years. Canal receipts had not yet begun.

Of the receipts of Northwestern markets, Chicago had 32.5 per cent., Toledo 24.1, St. Louis 17.2, Peoria 15, Milwaukee 4.8, Detroit 4.2, and Cleveland 2.2 per cent.

Of the receipts of Atlantic ports New York had 33.5 per cent., Philadelphia 27, Baltimore 15.2, New Orleans 13, Boston 10.2, Portland 1, and Montreal 0.1 per cent. New York's receipts keep up very well for this time of year—just before canal receipts begin. There is a considerable increase in Philadelphia receipts, but the most noticeable change is the great decrease in Baltimore receipts, which are not half as great as in either of the three previous weeks, and are the smallest for nine weeks.

The grain and flour exports from Atlantic ports for four weeks have been:

Week ending:				
	April 28.	April 21.	April 14.	April 7.
Flour, bbls.	75,479	91,014	59,017	58,006
Grain, bush.	4,210,038	4,748,482	4,386,368	5,209,033

The decline in prices and the lower ocean rates have not stimulated exports, which are large, but pretty steady and not increasing.

Baltimore grain receipts for April were as follows, flour in barrels and grain in bushels:

	1880.	1879.	Inc. or Dec.	P. c.
Flour.....	93,181	92,199	I.	982 1.1
Wheat.....	2,214,042	1,295,919	I.	918,123 70.8
Corn.....	2,260,701	3,379,396	D.	1,118,695 33.1
Other grain.....	78,564	191,098	D.	112,534 58.9
Total grain.....	4,553,397	4,866,413	D.	313,106 6.4

Total, flour reduced to wheat..... 5,019,212 5,327,408 D. 308,196 5.8

Total receipts for the four months ending April 30 were as follows:

	1880.	1879.	Decrease.	P. c.
Flour, barrels.....	383,905	439,937	56,032	12.7
Grain, bushels.....	14,835,087	17,031,227	2,196,140	12.9
Total, bushels.....	16,754,612	19,230,912	2,476,300	12.9

April exports were 29,967 barrels and 30,151 sacks of flour, and 4,363,244 bushels of grain.

### Georgia Lumber Rates.

After giving a hearing to both sides on a petition from the lumbermen of Eastern Georgia, the Railroad Commission on April 29 issued the following order:

Lumber on the Savannah, Florida & Western Railroad, the Macon & Brunswick Railroad and the Central Railroad is hereby placed in Class P instead of O, without the addition of 20 per cent. heretofore allowed in circulars No. 2, 3, and 4, subject to our rules as to loading and unloading and allowing 22,500 lbs. per car-load. The rates to embrace



transportation from the mills (without charge for side tracks) to the terminus nearest the wharf.

These rates are \$10 per car for 50 miles; \$14 for 100 miles, and \$17 for 150 miles. The rates as first fixed, against which the lumbermen petitioned, were \$15.60 per car for 50 miles; \$20.40 for 100 miles and \$24 for 150 miles, and with only 20,000 lbs. as a car-load.

#### Cotton Movement.

The sea-board receipts for the eight months of the crop-year from Sept. 1 to April 30, have been, in bales:

1880.	1879.	1878.	1877.	1876.
4,638,867	4,317,007	4,113,803	3,839,630	3,941,356

During the rest of the crop-year, receipts usually are very light. Last year, they amounted to about 135,000 bales, or about a week's receipts when the business is active.

The exports for the eight months have been 3,150,320 bales this year, against 3,162,791 last. With an increase of 321,860 bales, or 7 1/2 per cent. in receipts, there has been an increase of but 17,529 bales, or 0.6 per cent in exports.

#### Chicago Lumber Traffic.

Receipts and shipments at Chicago for the four months from Jan 1 to April 27 have been, in feet:

	1880.	1879.
Receipts.....	106,163,000	103,960,399
Shipments.....	153,352,095	153,615,565

The business has thus been substantially the same this year as last, though a large increase had been counted on. Within the past few weeks prices have fallen materially and business has been decidedly dull. For the week ending April 27 the shipments were nearly a third less than in the corresponding week of last year.

#### Southwestern Association.

The Chicago, Rock Island & Pacific has given notice of appeal from the decision of the arbitrators by which it was awarded 25.35 per cent. of traffic between Chicago and Missouri River points. It claims that its acquisition of a line to Kansas City (by leasing the right to run trains over the Kansas City & Cameron Branch of the Hannibal & St. Joseph) gives it at least as good command of traffic as the Chicago & Alton has, which was awarded 29.50 per cent.

The traffic of the Kansas City, St. Joseph & Council Bluffs received from roads out of the Association for Missouri River points has been pooled, and it is prevented from cultivating business to these points via Council Bluffs.

#### Lake Superior Iron Ore.

The first report for this season from the Lake Superior region is from the opening up to April 28. At that date the shipments of iron ore from Escanaba had been 41,157 tons, of which 22,760 tons came from mines in the Marquette District, and 18,397 tons from the Menominee District. No shipments reported from the Lake Superior ports, L'Anse and Marquette, the St. Mary's Canal not having been open.

#### Cotton to a Cotton Port.

The Savannah (Ga.) News of April 24 says: "The steamship City of Columbus which will arrive to-day from New York will have as part cargo 400 bales of cotton consigned to Messrs. Muir & Duckworth of this city, and intended to be shipped by the bark Solon to the Baltic. This is the first time in the history of Savannah, we believe, that a cargo of cotton has been received via New York."

**Southern Railway & Steamship Association Rates.** The following circular from General Commissioner Powers is dated April 29:

"Owing to reduction by trunk-lines of rates on meat and grain, the rates from all Western cities, both by Green Line and Eastern lines to coast and interior Eastern line points, are hereby reduced (below rates of Circular Letter No. 43), as follows:

"On Class B, 10 cents per 100 pounds.  
"On Classes C and D, 5 cents per 100 pounds.  
"On Class F, 10 cents per barrel.  
"And to Augusta, Georgia—On Class B, 5 cents per 100 pounds. All taking effect Monday, May 3, 1880."

#### Canadian Canals.

There is a strong movement in Canada, and especially at Montreal, headed by the Montreal Board of Trade, to have the tolls on the Welland and the St. Lawrence canals abolished. These last year amounted to but \$238,135, in 1879 barely earning their maintenance expenses, and their abolition would hardly have much effect on traffic. To further stimulate Montreal trade, the tonnage dues at that port will be abolished for sailing vessels and barges.

#### Liens on Imported Goods for Railroad Freight Charges.

A telegram from Washington, dated May 2, says: "The Committee on Ways and Means have agreed upon a bill in relation to liens upon imported merchandise, in favor of inland transportation companies. The bill proposes to amend section 2,981 of the Revised Statutes, so it will read as follows:

"That whenever the proper officer of the customs shall be duly notified of the existence of a lien for freight upon imported goods, wares or merchandise in his custody, he shall, before delivering such goods, wares or merchandise to the importer, owner or consignee thereof, give reasonable notice to the party or parties claiming the lien; and the possession by the officers of Customs shall not affect the discharge of such lien; and such officer may, under such regulations as the Secretary of the Treasury may prescribe, refuse the delivery of such merchandise from any public or bonded warehouse, or other place in which the same shall be deposited, until proof to his satisfaction shall be produced that the freight thereon has been paid or secured; but the rights of the United States shall not be prejudiced thereby, nor shall the United States or its officers be, in any manner, liable for losses consequent upon such refusal to deliver. If merchandise so subject to a lien, regarding which notice has been filed, shall be forfeited to the United States and sold, the freight due thereon shall be paid from the proceeds of such sale in the same manner as other charges and expenses authorized by law to be paid therefrom, are paid."

"It appears that some of the through freight lines engaged in carrying freight upon the internal routes of transportation made application to the Secretary of the Treasury claiming that, under section 2,981 of the Revised Statutes, they would be permitted to file liens for freight on imported merchandise arriving at the port of final destination, and asking that if the Secretary decided adversely to this application he should make such a regulation under section 2,983 of the Revised Statutes as would permit such liens to be filed and enforced by the carriers. The Secretary decided that section 2,981 of the Revised Statutes provided for filing liens for freight only on merchandise imported in a vessel or vehicle arriving from a foreign port, and made no such provision for filing such liens on merchandise sent under transportation bonds within the United States. The Secretary also held that he had not the requisite power under section 2,983 to make such a regulation. Conceding, however, that it would be proper to give to the carriers of such freight the protection which they required, the Secretary of the Treas-

ury, in a letter dated Feb. 14, 1879, recommended the passage of an Act to accomplish that purpose.

"The statement was made to the Secretary of the Treasury that it sometimes happened that goods shipped for transportation in bond from the point of arrival to the point of destination would be received by these transporting lines at the first point, the ocean freights paid upon them, carried to the ultimate point of destination, and when they arrived there delivery would be demanded by the United States officers. The goods being placed in the hands of United States officers upon demand made by the consignees, they would be delivered to them without the payment of the freight to the carriers, and thus the carriers would lose not only the freight which they had earned, but also the ocean freight advanced, which it was the very purpose of Section 2,981 to secure. Under such state of facts the Committee of Ways and Means are of opinion that the Secretary was justified in recommending the passage of the bill."

#### Canadian Regulations Concerning the Importation and Transit of Live Stock.

The Canadian Privy Council has issued new regulations for the prevention of the introduction of the contagious diseases of live stock into that country, much less burdensome than those which have been enforced for a year past. This "Health of Animals Order," as it is called, provides that American cattle and hogs may "be permitted to enter Canada in bond at the ports of Sarnia, Windsor and Amherstburg, to be conveyed under surveillance and strict rules of isolation to the American frontier at Rouse's Point, St. Armand Station, Island Pond, the Suspension Bridge (Niagara), and the International Bridge (Fort Erie)," where an agreement between the Minister of Agriculture and the railroad company interested has been communicated to the respective collectors of customs at those places. Such agreements must provide that before admission for transit a clean bill of health from an inspecting veterinary surgeon, appointed by the Minister of Agriculture, shall be presented for the animals; that each train carrying American cattle shall be accompanied by one of a staff of guardians, to be appointed by this Minister; that the cars employed be devoted to this traffic solely; that no Canadian animals shall be carried in the same train, nor close to the American cattle, and that the cars used for the latter shall never be used for carrying Canadian animals; that there be no unnecessary delay in transit; that due precautions be taken to retain the droppings of the animals in the cars, and disinfect them if need be; and that none of the animals, or their carcasses, (unless buried immediately under the direction of the government guardian), be left in Canada, nor permitted to come into contact with any other persons than those employed on the train while in transit.

Cattle carried over the Grand Trunk Railway to the East may be unloaded for food, water and rest at the station of Lyn, in Ontario, where a double isolated inclosure must be established and fitted up to the satisfaction of the Minister of Agriculture before the transit will be permitted; and these inclosures are declared to be an "infected place" for the purpose of the Animals Contagious Diseases Act. The inclosures through which American cattle enter Canada at Sarnia must be similarly arranged, approved and protected.

There are further regulations concerning the importation of cattle into Canada and for the shipment of cattle in ocean vessels from Canadian ports.

#### No Reduction in East Bound Rates Contemplated.

Circular No. 184 of the Joint Executive Committee, issued under date of April 30, by Albert Fink, Chairman, is as follows:

"A report having been published in western papers, that railway officials at Chicago have been apprised by Commissioner Fink, that he will shortly ask the Joint Executive Committee of the trunk lines to reduce the freight rates on the basis of twenty-five (25) cents per 100 pounds on grain, from Chicago to New York, I will state for your information and those interested in the transportation rates, that there is no truth whatever in the report."

"None of the members of the Executive Committee (and there are now over forty companies represented on the committee) have expressed any intention to make a change in the east-bound rates at present, and as far as their views are known, it appears that there is a general desire to maintain present rates during the summer months."

#### THE SCRAP HEAP.

##### Strength of Iron and Steel as Affected by Cold.

In a paper read before the Institution of Civil Engineers Feb. 10 by Mr. John James Webster, the author gave an account of the experiments he had made on bars of wrought iron, cast iron, malleable cast iron, Bessemer steel and best cast tool steel, with a description of the apparatus used, and of the method of conducting the experiments. The bars were tested with tensile and transverse strains, and also by impact; one-half of them at a temperature of 50° Fahrenheit, and the other half at 5° Fahrenheit. The lower temperature was obtained by placing the bars in a freezing mixture, care being taken to keep the bars covered with it during the whole time of the experiments. The results of the experiments were summarized as follows: (1) When bars of wrought iron or steel were submitted to a tensile strain and broken, their strength was not affected by severe cold—5 deg. Fah.—but their ductility was increased about 1 per cent. in iron and 3 per cent. in steel. (2) When bars of cast iron were submitted to a transverse strain at a low temperature, their strength was diminished about 3 per cent. and their flexibility about 16 per cent. (3) When bars of wrought iron, malleable cast iron, steel and ordinary cast iron, were subjected to impact at a temperature of 5 deg. Fah., the force required to break them, and the extent of their flexibility, were reduced as follows:

	Reduction of force of impact.	Reduction of flexibility.
Wrought iron.....	About 3 per cent.	About 18 per cent.
Steel, best cast tool..	" 3 1/2 "	" 17 "
Malleable cast iron..	" 4 1/2 "	" 15 "
Cast iron.....	" 21 "	Not taken.

The paper closed with a review of the experiments described, with some remarks on the conclusions arrived at, and with a statement of the opinions formed by different authorities. A case of samples of the fractured ends of the bars used in the experiments was exhibited.

##### Shipwrecked on a Railroad.

The unusual storm in Buffalo caused the waters of the lake to rise very high about the city Saturday evening. A local freight and passenger train coming from Rochester by way of Lockport and Tonawanda, at about seven, after abandoning one trestle which was submerged, took another line out, but had not gone far before both engines dashed into the water on the track three and a half feet deep and the train stopped. The water, which was a roaring torrent, extinguished the furnace fire and hopelessly wrecked the train. A heavy sea dashed against the cab and the whole side was broken in. The next moment a box car came floating along on the swift current and crashed into it. The collision carried away the light wood-work of the locomotive, and the whole mass,

with three men on board, plunged into the water. Fortunately it was not deep, and by a lively scrambling they got out. In the meantime the twenty passengers were getting anxious. Ties with rails attached were floating around, and by means of these and other appliances they were finally landed. One of them said: "It's a pretty state of affairs when a man gets shipwrecked at sea while traveling on a railroad." The rest of the little crowd assented. In addition to damage to the track, a number of freight cars standing on side tracks were undermined, and toppled and fell into the lake. A large number of telegraph wires were blown down, tangled and rendered temporarily useless. The Central road Saturday evening had only one wire in operation east.—*Utica Herald*, April 13.

#### OLD AND NEW ROADS.

**Atchison & Nebraska.**—This road and its Lincoln & Northwestern extension are worked from May 1 by the Burlington & Missouri River in Nebraska, under the lease lately ratified. The line from Atchison, Kan., to Lincoln, Neb., 147 miles, will be known as the Atchison & Nebraska, Southern Division; that from Lincoln to Columbus, 75 miles, as the Atchison & Nebraska, Northern Division.

**Augusta & Knoxville.**—The Greenwood & Augusta Company has been consolidated with this company, the agreement having been ratified by the stockholders. The company owns no completed road but has some graded road-bed between Greenwood, S. C., and the Savannah River.

**Baltimore & Chicago.**—A committee of the board of directors of this company has been for several days in Baltimore to try and secure aid from the Baltimore & Ohio in building the road. The proposed line is from a point on the Pittsburgh & Lake Erie by new Lisbon, Bayard, Wooster and Plymouth to Chicago Junction, O., the starting point of the Baltimore & Ohio's Chicago Division.

**Baltimore & Potomac.**—This company has applied for legislation necessary to authorize a reorganization by foreclosure of some of the mortgages on the road. The interest on the bonds is not in default, the interest having been paid by the Pennsylvania and Northern Central companies as guarantors.

**Bethel & Lake Umbagog.**—It is proposed to build a railroad from Bethel, Me., on the Grand Trunk, through the valleys of the Androscoggin, Ellis River, and Sawyer Brook, passing through Hemlock Island, Hanover and Andover Corner to Lake Umbagog. The distance is about 35 miles, in a general northerly direction.

**Boston & Albany.**—This company has just completed the work of laying a second track on the two miles of the Brookline Branch.

**Boston, Hoosac Tunnel & Western.**—An agreement has been made for the consolidation of the New York and Vermont companies of this name. The consolidation will be merely formal, the two companies being substantially the same.

**Burlington & Missouri River in Nebraska.**—This company's Nebraska Railway has been completed and opened for business to Central City, Neb., on the Union Pacific, 19 miles northward from the late terminus at Aurora, and 150 miles from the eastern terminus at Nebraska City.

The Republican Valley line is now completed to Arapahoe, in Furness County, Neb., 27 miles westward from the late terminus at Orleans, and 120 miles from the main line at Hastings.

The Atchison & Nebraska road is worked by this company from May 1, as noted elsewhere. These additions make the mileage now worked by the company as follows:

	Miles.
Main Line, Plattsmouth to Kearney Junction.....	191
Omaha Branch, Omaha to Oreadopolis.....	17
Beatrice Branch, Crete to Beatrice.....	30
Nebraska Railway, Nebraska City to Central City.....	150
Brownville Branch, Nebraska City to Nemaha.....	27
Republican Valley Line, Hastings to Arapahoe.....	120
Atchison & Nebraska Southern Division, Atchison, Kan., to Lincoln, Neb.....	147
Atchison & Nebraska Northern Division, Lincoln to Columbus.....	75
Total.....	757

This whole system will shortly be added to the Chicago, Burlington & Quincy, under the consolidation lately agreed on.

**Chicago & Northwestern.**—The survey of the Toledo & Northwestern Branch is now completed to the Des Moines River, 100 miles from the junction with the main line. Of this extension, 74 miles are now under contract to be completed July 1. This line is parallel to, and north of, the main line.

Work is in progress laying new rails of standard gauge between Ames, Ia., and Des Moines, where the track (the former Des Moines & Minneapolis road) is now narrow gauge.

**Chicago & Western Indiana.**—Mayor Harrison, of Chicago, on May 3, sent into the City Council a veto of the new ordinance permitting the building of this road in Chicago. After a long discussion the Council failed to pass the ordinance over the veto.

**Chicago, Milwaukee & St. Paul.**—The extension of the Davenport Line is now completed to a junction with the Iowa & Dakota Division at Ft. Atkinson, Ia., which is 28 miles northward from the old terminus at Fayette, and 150 miles from Davenport. Regular trains will soon run through, and the company intends to put on through cars between Davenport and St. Paul by this line.

The extension of the Monroe Branch to Shullsburg, Wis., will probably be built, the people on the line having accepted the company's offer to build it if the right of way and \$2,000 per mile were given, and raised the money. An effort will be made to have the road extended to Dubuque.

**Chicago, Rock Island & Pacific.**—The track of the Keokuk & Des Moines Division from Altoona to Des Moines, 10 miles, is parallel with that of the main line. It has been laid with steel rails and well ballasted, and will hereafter be used as a second track.

**Coney Island Elevated.**—The contract for this road has been let to Daniel R. Kelly, of New York, who intends to have his work done by July.

**Dallas & Wichita.**—The United States Circuit Court has granted an order restraining the sale of this road in foreclosure until arguments can be heard further in the case. The hearing is set for the June term.

**Detroit, Mackinac & Marquette.**—Chief Engineer Thomas McKeown makes the following statement to the *Detroit Post and Tribune*: "Much of the 20 miles contracted for last season is now graded, and work will be immediately begun on the portion contracted for last week. The first 13



miles of the road from Marquette east is over pine barrens, though immediately to the south of the line of the road is a fine hard-wood country. The next six miles is over rocky boulders to Deer Lake. The grade rises slightly all this distance, and to the Au Train River. Thus far the line of the road is very close to the coast of Lake Superior. Afterward it bends inland. The summit, or highest point in the grading, is at Munising. Thence east the first 10 miles of the road is through a fine hard-wood timber country, mostly beech and maple. Then the road strikes the beaver-dam swamps of the headwaters of the Monistique, and runs through them till it reaches the region of the headwaters of the Taquamenon. It has not yet been definitely settled whether the lower terminus shall be at Point St. Ignace or Point-a-Bar. Both these points have fine harbor facilities, and whichever one is decided upon as the terminus will, no doubt, become a large shipping point for through vessels.

Mr. McKeown said he thought, from an inspection of the country through which the road passes, there was almost no part of it which could not be profitably and easily put under cultivation. To complete a line to the Sault, about 35 miles more of road will have to be built than that now contracted for. The principal shipments for a time will be ore, lumber and the traffic of the Northern Pacific. Ultimately, Mr. McKeown thinks, grain will be principally raised in the western half of the upper peninsula. The road will be completed, in all probability, about September, 1881."

**Ft. Madison & Northwestern.**—This company has executed a mortgage for \$700,000 to the Union Trust Company, of New York. The mortgage is to cover the road for 100 miles from Ft. Madison, Ia.

**Grayville & Mattoon.**—The United States Circuit Court at Springfield, Ill., has granted a decree of foreclosure and sale against this road in the suit which has been pending some time. The road is in operation from Mattoon, Ill., to Parkersburg, 71 miles. By the latest report there were \$900,000 bonds and \$182,000 floating debt. Arrangements have been made to consolidate it with the Peoria, Decatur & Evansville.

**Kansas City, Ft. Scott & Gulf.**—This company offers to its stockholders rights to subscribe for \$500 of stock and a \$1,000 bond for \$1,000, \$50 shares having the right to a subscription. The branch corporations, whose roads it is thus proposed to complete, and which will be leased to the Fort Scott road for 7 per cent. on the bonds, and the same dividends as are paid on Fort Scott common stock, are thus described in the circular:

1. Short Creek & Joplin Railroad Company, owning a road from Baxter Springs, Kan., to Joplin, Mo., its length being 15½ miles, and costing \$215,000.

2. Memphis, Kansas & Colorado Railroad Company (narrow gauge), owning a completed road from Cherokee east to the coal mines and zinc works at Wier City, six miles; and from Cherokee west to the City of Parsons, 26 miles, and which it is further proposed to extend from Parsons west to the line of the Kansas City, Lawrence & Southern road, 19 miles. The whole 44 miles to cost, with equipment, \$300,000.

3. Fort Scott, Southeastern & Memphis Railway Company (extension) proposes to build from the southern terminus of its road southeasterly, in the direction of Springfield, Mo., 39 miles, at a cost of \$440,000.

4. A corporation to be organized under the name of Rich Hill Railroad Company, for the purpose of constructing a road from a point on the Kansas City, Fort Scott & Gulf road, near Pleasanton, Mo., easterly to the coal fields of Bates and Vernon counties, Mo., a distance of 27½ miles, at an estimated cost of \$370,000. The whole amount to be raised for these branch lines is thus \$1,325,000.

**Kansas City, St. Joseph & Council Bluffs.**—The following circular addressed to holders of this company's securities explains the terms of sale to the Chicago, Burlington & Quincy Company:

"Holders of a majority of the income bonds and stock of the Kansas City, St. Joseph & Council Bluffs Railroad Company have decided to accept what they consider an advantageous offer for the sale of their securities, with the agreement that the other holders of such shares and bonds may dispose of the same upon the same terms before Aug. 1, 1880.

"The terms are as follows: The purchaser agrees to pay \$72.50 per share for the stock of the Kansas City, St. Joseph & Council Bluffs Railroad Company, and \$72.50 per share for the stock, when issued, of the Nodaway Valley and Tarkio Valley railroad companies; and 90 per cent. flat for income bonds of the Kansas City, St. Joseph & Council Bluffs Railroad Company,—the purchaser to have the option for three weeks from April 17, 1880, to pay in cash for the above-named securities, or in Chicago, Burlington & Quincy Railroad Company's stock, at \$125 per share. If cash is paid, interest is to be added at 6 per cent. per annum on the purchase price, from May 1, 1880, to date of payment. If paid in Chicago, Burlington & Quincy Railroad Company's stock, the stock is to be delivered as soon as may be after the election is made to pay in stock.

"The mortgage bonds of the Kansas City, St. Joseph & Council Bluffs Railroad Company to remain as they now are, and the mortgage bonds of the Nodaway Valley and Tarkio Valley railroad companies to be issued as originally proposed in the circular offering the same to the subscribers."

**Knoxville & Paint Rock.**—A meeting was held in Sevierville, Tenn., recently, to advocate the construction of a road from Knoxville, Tenn., to the North Carolina line at Paint Rock, to connect with the Western North Carolina, and to open up the fertile lands in the valley of the French Broad River in Sevier and Cocke counties. A committee was appointed to confer with the new owners of the Western North Carolina road, and see if any aid could be obtained from them.

**Lake Ontario Southern.**—This company has executed a mortgage to the Union Trust Company, of New York, to secure an issue of \$3,300,000 bonds to complete and equip the road. The company is a consolidation of the Ontario Southern and the Geneva, Hornellsville & Pine Creek; it has a line completed from Sodus Point, N. Y., to Stanley, 34 miles, and proposes extending it by way of Hornellsville to the coal region of Potter County, in Pennsylvania.

**Levis & Kennebec.**—On May 5 the equipment of this road was attached in a suit to recover on overdue coupons. It is now in possession of officers of the Quebec Superior Court.

**Louisville & Nashville.**—It is stated that the Union Express Company, which does business over this road, will shortly sell its property to the railroad company, which will then transact directly the express business over its own and controlled lines.

**Maine Central.**—The board of directors, at a meeting held April 28, authorized the President to make a contract for a new iron bridge over the Kennebec at Skowhegan.

**Manchester & Keene.**—This road was completed from

Greenfield, N. H., to Keene in December, 1878. It was to have been worked by the Nashua & Lowell Company, which made considerable advances to aid in its construction, but that company withdrew its trains after running them only a few days, and the road has not since been worked. The reason given for the withdrawal was that the road had been hastily and badly built, and was not in a safe condition. Recently, several parties, largely interested in the road filed a bill in equity in the New Hampshire Supreme Court to compel the Nashua & Lowell to work the road, or in default of such action, asking that the Court appoint a receiver to complete and work the road. A hearing on the bill was had last week, and the Court afterwards announced that an order would be granted appointing a receiver to work the road for the benefit of all parties concerned.

**Massachusetts Central.**—Contracts have been let for most of the remaining bridging and rock-cutting. The force on the road has been considerably increased and the work is to be pushed. The contractors now promise to have the rails laid by July 4 from the junction with the Lexington & Arlington Branch of the Lowell road to the Boston, Barre & Gardner crossing in Holden. The rails to be laid are 60 lbs. to the yard, and 2,640 ties to the mile are to be used. Contracts are soon to be let for the completion of the western end of the road.

**Mechanicville & Ft. Edward.**—This company has been organized as successor to the Schuylerville & Upper Hudson, whose property was sold under foreclosure in July, 1877. The old company owned no completed road, but had a graded road-bed from Mechanicville, N. Y., on the Rensselaer & Saratoga road, northward up the Hudson to Ft. Edward on the White Hall line of the same road, about 27 miles. The new organization is controlled by the Delaware & Hudson Canal Company. The road, when finished, will be a short cut for business from Albany to Lake Champlain and the New York & Canada road, decreasing by about 10 miles the distance between Troy and White Hall.

**Memphis & Little Rock.**—It is reported, and thus far without contradiction, that a controlling interest in this road has been sold to the St. Louis, Iron Mountain & Southern Company. The road is 133 miles long, from Little Rock, Ark., to Hopefield on the Mississippi opposite Memphis, Tenn. The present company was organized in 1877, by bondholders who bought the road at foreclosure sale. By the last report the company had \$1,500,000 stock, \$250,000 preferred bonds and \$2,600,000 general mortgage bonds. Its control is valuable to the Iron Mountain Company, as giving it complete control of the Little Rock and Southwestern Arkansas business.

**Minneapolis & St. Louis.**—An agreement has been concluded by which this company leases for five years the right to run its freight trains over the St. Paul & Duluth road from White Bear Junction, near Minneapolis, to Duluth, at a rental of \$50,000 a year. The agreement also provides that this company shall abandon the building of its proposed extension from White Bear to Taylor's Falls, and shall give no aid to the proposed Wisconsin line from Taylor's Falls to Superior or Duluth.

**Nashua & Lowell.**—This company has filed a bill in equity to recover some \$250,000 from the Boston & Lowell. Under the contract by which the two roads were worked together over 20 years the Nashua & Lowell was to receive 31 per cent. of the net earnings, but the bill alleges that a portion of this was withheld and that really over \$200,000 are due from the joint account.

It is also charged that a larger sum was spent in laying steel rails on the Boston & Lowell than was authorized by the contract. There are also some other matters in dispute included in the bill. The Nashua & Lowell Company claims to have repeatedly offered to submit all disputes over the settlement of the joint accounts to arbitration, but all such offers have been declined.

**New York & Atlantic Coast.**—This company has been organized to build a railroad from Bay Ridge on New York Bay eastward to the northern end of Hicks' Beach in Queens County on Long Island. The plan seems to be to run from Bay Ridge to Coney Island, and then along the shore, connecting the termini of all the Coney Island roads and probably extending to those leading to Rockaway.

**New York & New England.**—The directors have voted to accept the provisions of the act authorizing the sale by the state to this company of the 25-acre and 12-acre tracts on the South Boston Flats.

**Northern Pacific.**—A correspondent sends us the following statements in relation to this road:

"The Northern Pacific re-commenced the construction of their road the past season, grading 100 miles west of the Missouri River and laying the track on about 60 miles. They have three location parties in the field west of here, one east of Duluth surveying an extension east, south of Lake Superior to the Montreal River, where other companies will connect with them and complete a road to the Sault Ste. Marie, then connecting with the Canadian system. The main line will be extended west to the Yellowstone River this season, some 180 miles. Thirty miles are to be built northwardly in the west side of the Red River Valley. Two hundred miles were located from the Columbia River at the head of navigation northeast to Lake Pend d'Oreille last season, a portion of which will be built this year, making nearly 400 miles of railroad to be built this season. The blockade of the Dakota Division by snow could have been avoided by a very trifling expense. This will be guarded against another season."

**North Wisconsin.**—A contract has been let to C. C. Smith, of La Crosse, Wis., for grading 30 miles of the extension of this road to be built this year from Mud Lake, Wis., toward Lake Superior. He has also the contract for the bridges and trestle-work of the remaining 10 miles. Work will be begun very soon. The 40 miles to be built this year run, it is said, through a swampy, rather barren and unattractive country.

**Ogdensburg & Lake Champlain.**—At the special meeting in Ogdensburg, N. Y., May 4, the stockholders voted to authorize the execution of a new mortgage for \$4,500,000, as proposed by the directors. The bonds are to be used to retire the present debt, improve the road, buy new equipment and build grain elevators at Ogdensburg.

**Pennsylvania.**—In declaring the semi-annual dividend the board decided to give stockholders the option of taking it in stock, instead of cash, in order that the stock bought of the city of Philadelphia, and now held by the company, may be distributed among the stockholders. The option will hold good until Oct. 1.

The retirement of President Scott on account of ill health is noted more fully elsewhere.

**Penobscot & Lake Megantic.**—The City Council of Bangor, Me., has voted to sell the city's interest in the Bangor & Piscataquis road to this company for \$500,000. This is the price originally offered by the company, when the City Council refused to sell for less than \$600,000.

**St. Paul, Minneapolis & Manitoba.**—Work has been

actively begun on the branch from Breckenridge, Minn., up the west side of the Red River Valley to Casselton, Dak., on the Northern Pacific. Langdon & Co., of Minneapolis, are the contractors.

**Savannah, Florida & Western.**—In the United States Circuit Court in Savannah, April 30, at the suit of M. K. Jesup, Trustee, a temporary injunction was granted, restraining this company from regulating its tariff by that of the Georgia Commission, and restraining the Commission, also, from acting in the premises. The injunction is a temporary one, holding until a full hearing can be had in the case.

**South Carolina.**—The United States Circuit Court has granted orders directing the Receiver to pay the interest due Jan. 1, 1880, on the Louisville, Cincinnati & Charleston (Columbia Branch) matured bonds; on the matured and other bonds guaranteed by the state; on the matured and other bonds secured by the trust-deed of July 1, 1868, and known as the first-mortgage bonds. Such of these coupons as are on sterling bonds may be paid in London, and the Receiver is authorized to pay usual commissions and exchange. The Receiver is also directed to pay the interest due July 1, 1878, and Jan. 1, 1879, on nine sterling bonds numbered 1, 51, 61, 71, 81, 360, 390, 409 and 429.

The Court also authorized the Receiver to buy 100 new freight cars, and approved the purchase of a number of cars to replace old ones destroyed.

An order has also been granted directing the Special Master in the case to receive proof of the claims of certain holders of non-mortgage bonds, on condition that they contribute their equitable share of the expenses of the parties defendant in the case.

**Syracuse, Binghamton & New York.**—Work has been begun on a second track for this road from Apulia to Homer, N. Y., 15 miles. This section will be built this season. It is intended to make a second track over the whole length of the road in time.

**Toledo & Ann Arbor.**—Work has been begun on the bridge over the Huron at Ann Arbor, Mich., and on the grading of the extension between Ann Arbor and South Lyon. Contracts for grading between South Lyon and Wixom will be let very shortly.

**Union Pacific.**—A new survey is being made of the line from the Union Division or main line of the old Union Pacific at Julesburg, Col., to the Cheyenne Division (Colorado Central) at Greeley. The line now being run follows the South Platte River and is said to have very easy grades; its construction would shorten considerably the line from Omaha to Denver. This Julesburg line was the main line of the Colorado Central, as originally projected, but its building was abandoned and nothing was ever done on it east of Greeley.

**Wabash, St. Louis & Pacific.**—At a special meeting in St. Louis, May 5, the stockholders voted to approve the contracts for the acquisition of various roads lately leased or purchased, and also the execution of a new mortgage, in which is to be consolidated all the outstanding debt of the company.

**West Chester & Philadelphia.**—It is said that Col. H. S. McComb has secured an option on a controlling interest in the stock of this company. His object is understood to be to use the road as an entrance into Philadelphia for his projected new line between that city and Baltimore.

**Wyoming, Montana & Pacific.**—A bill authorizing this company to build a railroad across the Fort Russell and Fort Laramie military reservations passed the United States Senate May 4.

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## Michigan Central.

The report for the year 1879 was submitted at the meeting of stockholders for the election of directors at Detroit May 6.

The road worked by the company is the same as for several years past, namely:

Main Line, Detroit to Chicago, including 14 miles used jointly with the Illinois Central.....	284.00
Air Line.....	103.60
Joliet Division.....	45.00
Grand River Valley Division.....	84.00
Jackson, Lansing & Saginaw Division.....	236.00
Kalamazoo & South Haven Division.....	40.00
Niles & South Bend Branch.....	11.12

Total.....803.72

Only the 270 miles of the Main Line from Detroit to Kensington (the 14 miles from Kensington to Chicago is owned by the Illinois Central) is owned by the company. The branches are all leased. There are 77.83 miles of double track and 162.55 miles of sidings on the line owned, and 68.41 miles of sidings on the branches; in all, 1,112.51 miles



of track, 539.51 of which were laid with steel rails at the close of 1879, including all of the track of the Main Line and Air Line. (The latter is used as a second track for through freight trains). The changes in the year were the addition of 15 miles to the side-tracks, the cost of which was charged to road repairs and not to construction.

The equipment at the close of the year was as follows:

	1879.	1878.
<b>Locomotives.</b>	219	219
<b>Passenger-train cars:</b>		
Dining cars.	2	2
First-class.	77	77
Second-class.	26	26
Combination (passenger and baggage).	10	9
Combination (baggage and mail).	31	32
Postal cars.	3	3
	149	149
<b>Freight-train cars:</b>		
Way cars.	133	129
Stock, single deck.	256	256
" double deck.	176	176
Merchandise, 8-wheel.	3,184	3,187
" 4-wheel.	100	
Platform and coal cars.	1,340	1,291
	5,189	5,049
<b>Service cars:</b>		
Paymaster's.	1	1
Inspection.	2	1
Derrick.	3	3
Pile-driver.	1	1
	7	6

There was an addition of 4 way, 49 flat and coal cars, and 100 4-wheel box cars; and a reduction of 3 8-wheel box and 10 single-deck stock cars. The cost of the 140 cars added was charged to construction.

The balance sheet shows the following assets and liabilities.

	Assets.	Liabilities.
Construction account.	\$28,447,937.37	
Leased lines.	5,131,933.33	
Equipment bond trustees.	545,245.82	
Investments.	664,765.55	
Detroit & Bay City Railroad.	323,191.78	
Fuel and supplies.	237,670.67	
Bills receivable.	58,940.44	
Cash.	136,381.06	
<b>Total.</b>	<b>\$35,546,005.02</b>	
Capital stock.		\$18,738,204.00
Funded debt.		13,691,000.00
Income account to end of 1878.		3,019,347.81
Income account from end of 1878 to end of 1879.		97,453.21
<b>Total.</b>		<b>\$35,546,005.02</b>

Of the bonds, \$716,500 have been purchased and are now held by trustees of sinking funds.

Compared with the general account of the previous year, there is an increase of \$10,000 in construction, being a final payment for land at West Bay City. There is no change in the capital stock. In the funded debt the changes are the purchase of \$119,000 of 8 per cent. bonds for sinking funds and the substitution of \$500,000 6 per cent. bonds for an equal amount of 8 per cent. second mortgage bonds of the Grand River Valley line. The yearly interest charge is now \$1,418,590, besides which there are rentals which are not in the account of interest on bonds amounting to \$184,320, making the total yearly fixed charges for 1880, \$1,602,910. Of the interest, \$33,920 is on guaranteed bonds of the Detroit & Bay City road, which is neither owned, leased nor worked by the Michigan Central.

The leased lines are mostly deeply indebted to the lessee for interest advanced, and improvements, and they are so completely controlled by it that it may be considered as its property, just as their debts may be considered its liabilities, as they are reckoned above.

Counting only the 270 miles of road directly owned by the company, however, the capital stock is at the rate of \$69,401 and the funded debt \$39,165 per mile of road. Including all the leased lines and all their bonds, there are \$23,719 of stock and \$23,870 of bonds per mile, making a total of but \$47,589 per mile, which is considerably below the average of railroads of the United States. The fixed charges this year are at the rate of a little less than \$2,000 per mile of road worked.

The work done by this road has been:

	1879.	1878.	Increase.	P. c.
<b>Locomotive miles:</b>				
Passenger.	1,083,098	1,047,087	45,411	2.7
Freight.	3,687,305	3,286,158	401,167	12.2
Miscellaneous.	238,651	218,673	19,978	3.6
Switching.	2,099,007	1,960,032	138,975	25.9
<b>Total.</b>	<b>7,097,061</b>	<b>6,812,530</b>	<b>284,531</b>	<b>13.0</b>
<b>Car miles:</b>				
Passenger.	8,499,452	8,090,134	409,300	5.1
Freight.	88,384,701	77,782,887	10,601,814	13.6
<b>Traffic:</b>				
Tons hauled.	3,513,819	2,786,646	727,173	26.1
Ton-mileage.	721,019,413	548,053,707	172,965,706	31.6
Passengers carried.	1,443,655	1,373,530	70,125	2.5
Passenger mileage.	93,232,430	79,984,072	13,248,358	17.0
<b>Average passenger trains:</b>				
No. cars.	5.02	4.71	0.11	2.1
No. passengers.	55.07	48.37	6.70	14.0
<b>Average freight trains:</b>				
No. cars.	23.97	23.67	0.30	1.3
No. tons freight.	195.54	166.78	28.76	17.2

This is one of the few roads which include the valuable records of car mileage in their reports. It is noticeable that the increase in both passenger and freight traffic was much greater not only than the increase in train mileage, but also than the increase in car mileage; more cars were taken in a train and more passengers and freight in a car. The increase in average freight loads was partly due to better traffic westward, which required no addition to either train or car mileage.

The traffic as distinguished between through and local, east-bound and west-bound, was as follows:

	1879.	1878.	Inc. or Dec.	P. c.
<b>Ton miles:</b>				
Through eastward.	387,015,495	332,767,450	54,248,045	16.3
Through westward.	168,031,830	85,157,565	82,874,265	97.4
<b>Total through.</b>	<b>555,047,325</b>	<b>417,925,015</b>	<b>137,122,310</b>	<b>32.8</b>
<b>Local.</b>	<b>165,972,088</b>	<b>130,128,692</b>	<b>35,843,396</b>	<b>27.6</b>
<b>Total.</b>	<b>721,019,413</b>	<b>548,053,707</b>	<b>172,965,706</b>	<b>31.6</b>
<b>Passenger miles:</b>				
Through eastward.	10,475,692	14,867,968	1,007,724	10.8
Through westward.	14,913,692	15,106,556	282,864	1.9
Through emigrant.	15,770,804	7,749,508	8,020,296	103.5
<b>Total through.</b>	<b>47,160,188</b>	<b>37,814,032</b>	<b>9,346,156</b>	<b>24.5</b>
<b>Local.</b>	<b>46,072,242</b>	<b>41,870,040</b>	<b>4,202,202</b>	<b>10.0</b>
<b>Total.</b>	<b>93,232,430</b>	<b>79,684,072</b>	<b>13,548,358</b>	<b>17.0</b>

From this it appears that the percentages of through and

local east and west-bound mileage of the total passenger and freight traffic were:

	1879.	1878.	1877.
<b>Freight.</b>			
Through east.	53.7	60.7	56.1
Through west.	23.3	15.5	20.5
<b>Total through.</b>	<b>77.0</b>	<b>76.2</b>	<b>76.6</b>
<b>Local.</b>	<b>23.0</b>	<b>23.8</b>	<b>23.4</b>
<b>Passengers.</b>			
Through east.	17.7	18.7	20.0
Through west.	16.0	19.1	20.7
Through emigrant.	16.9	9.7	7.4
<b>Total through.</b>	<b>50.6</b>	<b>47.5</b>	<b>48.1</b>
<b>Local.</b>	<b>49.4</b>	<b>52.5</b>	<b>51.9</b>

The most notable change in the year is the vast increase in west-bound freight, which has nearly doubled, and in emigrant traffic, which more than doubled. One-third of the whole through passenger traffic was emigrant traffic, in 1879, and nearly three-fifths of the whole large increase of passenger traffic was in emigrant business, and the rest chiefly in local passenger traffic.

The earnings and expenses, in detail, were as follows:

	1879.	1878.	Inc. or Dec.	P. c.
<b>Earnings:</b>				
Freight.	\$4,986,987.84	\$4,646,247.91	\$340,739.93	7.3
Passengers.	2,062,264.51	1,918,608.96	143,655.55	7.5
Mail.	96,444.50	94,220.04	2,224.46	2.4
Express.	129,133.23	123,730.75	5,402.48	4.4
Miscellaneous.	71,964.26	89,286.37	17,322.11	19.4
<b>Total.</b>	<b>\$7,346,794.34</b>	<b>\$6,872,094.03</b>	<b>\$474,700.31</b>	<b>6.9</b>
<b>Expenses:</b>				
Road repairs.	\$733,220.12	\$671,354.41	\$61,865.71	9.2
Bridge repairs.	75,116.85	96,672.66	21,555.81	22.3
Fence repairs.	12,562.25	6,632.20	5,930.05	89.4
Building repairs.	48,447.97	44,261.06	4,186.91	9.5
Water works repairs.	29,179.93	31,860.06	2,680.13	8.4
Dock repairs.	6,085.73	3,772.86	2,312.87	62.0
Locomotive repairs.	263,166.84	308,741.91	45,575.07	14.7
Car repairs.	360,562.78	339,976.06	20,586.72	6.0
<b>Total repairs.</b>	<b>\$1,528,342.47</b>	<b>\$1,503,272.58</b>	<b>\$25,069.89</b>	<b>1.7</b>
Locomotive service.	425,703.41	379,730.10	45,973.31	12.1
Train service.	421,867.80	405,408.40	16,459.40	4.1
Station service.	385,116.83	515,395.39	130,278.56	33.6
Water service.	9,209.05	9,940.19	731.14	7.4
General exp.	176,032.01	173,595.54	2,436.47	1.4
Legal expenses.	14,053.00	17,041.18	2,988.18	20.4
Miscellaneous expenses.	17,104.02	23,939.07	6,835.05	28.4
Foreign agencies.	102,065.06	126,442.05	24,376.99	19.3
Telegraphing.	73,877.48	67,598.36	6,279.12	9.2
Fuel consumed.	557,125.16	507,494.38	49,630.78	9.8
Rental.	29,424.29	28,506.26	918.03	3.0
Track rental.	55,007.84	34,895.10	20,112.74	58.0
Oil and waste.	61,005.52	65,826.82	4,821.30	7.3
Stationery.	29,778.19	28,357.47	1,420.72	5.0
Printing and advertising.	13,350.14	16,859.40	3,509.26	20.8
Loss and damage, freight.	11,188.73	11,151.53	37.20	0.3
Loss and damage, miscellaneous.	6,423.99	9,153.14	2,729.15	29.8
Stock killed and injured.	1,166.36	2,339.23	1,172.87	50.1
Injuries to persons.	63,618.64	11,703.06	51,915.58	443.7
Car mileage.	259,207.41	171,728.20	87,479.21	51.0
Commissions.	48,503.89	47,323.59	1,180.30	2.5
Interest.	8,528.79	4,639.14	3,889.65	83.8
<b>Total.</b>	<b>\$4,497,910.67</b>	<b>\$4,162,741.42</b>	<b>\$335,169.25</b>	<b>8.0</b>
<b>Taxes.</b>	<b>201,681.76</b>	<b>204,497.39</b>	<b>2,815.63</b>	<b>1.4</b>
<b>Total, including taxes.</b>	<b>\$4,699,592.43</b>	<b>\$4,367,238.81</b>	<b>\$332,353.62</b>	<b>7.6</b>
<b>Net earnings.</b>	<b>\$2,847,201.91</b>	<b>\$2,504,855.22</b>	<b>\$342,346.69</b>	<b>5.7</b>
<b>Per cent. of Expenses to Earnings:</b>				
Including taxes.	63.97	63.55		
Excluding taxes.	61.22	60.57		

Thus with an increase of 6.9 per cent. in the gross earnings, the working expenses increased 7.6 per cent., and the net earnings 5.7 per cent. With an increase of 31.6 per cent. in freight traffic there was an increase of but 7.3 per cent. in freight earnings, and with an increase of 17 per cent. in passenger traffic, the passenger earnings increased but 7.5 per cent. The difference between the increase in traffic and the increase of earnings is due to the smaller average rates received. The course of these rates for three years is shown below, in cents per passenger and per ton per mile:

	1879.	1878.	1877.
<b>Per passenger per mile:</b>			
Through east.	2.12	2.31	2.08
Through west.	2.23	2.28	2.10
Emigrant.	1.09	1.05	0.96
<b>Total through.</b>	<b>1.81</b>	<b>2.04</b>	<b>2.09</b>
<b>Local.</b>	<b>2.62</b>	<b>2.74</b>	<b>2.77</b>
<b>Total through and local.</b>	<b>2.21</b>	<b>2.41</b>	<b>2.36</b>
<b>Per ton of freight per mile:</b>			
Through east.	0.515	0.509	0.702
Through west.	0.441	0.548	0.605
<b>Total through.</b>	<b>0.493</b>	<b>0.580</b>	<b>0.702</b>
<b>Local.</b>	<b>1.356</b>	<b>1.679</b>	<b>1.845</b>
<b>Total through and local.</b>	<b>0.692</b>	<b>0.848</b>	<b>0.982</b>

There was thus a decrease of 11.3 per cent. in through and of 4.4 per cent. in local passenger rates from 1878 to 1879, and of 8.3 per cent. in the average passenger rate; and a decrease of 16 per cent. in through and 19 per cent. in local freight rates, and of 18.4 per cent. in the average freight rate.

The disposition of the revenue was as follows:

	1879.	1878.	1877.
<b>Net earnings.</b>	<b>\$2,847,201.91</b>	<b>\$2,504,855.22</b>	<b>\$2,175,836.43</b>
<b>Revenue from investments.</b>	<b>68,634.52</b>		
<b>Interest Main Line.</b>	<b>\$767,160.00</b>		
<b>Interest leased lines.</b>	<b>636,312.00</b>		
<b>Rental leased lines.</b>	<b>184,310.00</b>		
<b>Dividends (one 1½ and one 4 per cent.).</b>	<b>1,030,691.22</b>		
<b>Balance.</b>	<b>\$97,453.21</b>		

President Vanderbilt's report says:

"The company's property has been not only fully maintained, but in many respects materially improved, and its present condition is in every particular first class. Its roadway and track are in excellent condition; many of its bridges are iron structures of the most substantial character; its station grounds and buildings are complete and extensive; its terminal facilities are improving and increasing; its locomotives and car-shops are commodious, and fully equipped with the most improved machinery and appliances, and are sufficient to meet all possible demands for construction and repairs; and its rolling-stock is in a better condition than at any previous time. Much of this improvement has been accomplished within the past two years, during which period, by close economy in management, the stock has also yielded a fair return to its holders; and it is believed that by a con-

tinuance of the present policy, even improved results can be produced.

#### INCOME ACCOUNT.

"By reference to the balance sheet on folio 22, it will be observed that this account is rendered in two items, viz: 'To Dec. 31, 1878, \$3,019,347.81,' and 'From Jan. 1, 1879, \$97,453.21.' This division was made in order to enable the present administration to report definitely the disposition of the balance or surplus, which cannot be done with the old account, as it extends many years into the past, and does not contain sufficient information to prepare such a report. The account 'To Dec. 31, 1878,' shows a decrease from the amount as stated in the last annual report, which is occasioned by charging off a large amount of valueless stocks and bonds, the depreciation in value of others, and the settlement of a long pending suit with the Jackson Car & Manufacturing Company.

"The account 'From Jan. 1, 1879,' may be found on folio 23, showing a balance of \$97,453.21, which amount is composed as follows:

Paid Detroit & Bay City guaranteed interest.	\$33,920.00
Construction expenditures.	10,000.00
Cash surplus.	53,533.21
<b>Total.</b>	<b>\$97,453.21</b>

#### CONSTRUCTION.

"This account now stands at \$28,447,937.67, having been increased \$10,000 since the last report, by the final payment in purchase of 14½ acres of land at West Bay City. The cost of all actual improvements made during the year, such as replacing iron with steel rails, old wooden bridges with iron, the erection of new buildings, and the addition of new cars to the equipment, was charged to operating expenses.

#### MISCELLANEOUS.

"The report of the Sinking-Fund Trustees may be found on folio 26, and presents its usually healthful increase. It is also very gratifying to note, by special reports from the Trustees, that the securities held by them have steadily improved in value during the year, until at its close, they possess a market value of quite \$2,000,000.

"The report of the Land Commissioner of the Jackson, Lansing & Saginaw Railroad Company, which is now, for the first time, included in this company's report, may be found on folio 24.

"When it is remembered that the modified agreement of this company with the Jackson, Lansing & Saginaw, under date of Sept. 1, 1876, provides for the purchase and cancellation of all outstanding bonds, with the proceeds of land sales, and that the opinion has heretofore to some extent prevailed, that the lease of the Jackson, Lansing & Saginaw road by this Company was an onerous one, the information thus furnished by the Commissioner becomes of importance. It will be observed, by reference to the report, that the estimated value of the assets belonging to the land grant is about \$3,715,000, while the amount of outstanding bonds for which the same is pledged (see table on folio 20) is about \$3,740,000, a slight difference which it is reasonable to anticipate will readily be met by the now constantly increasing valuation of the lands.

#### OPERATION.

"The General Manager's report, on folio 9, to which attention is also invited, gives in detail the operation for the year. With the issue of our last annual report, it was supposed we had nearly, or quite, reached the minimum of traffic rates, but we have again to report a further decline, viz: freight—per ton per mile, from cent 0.848 to cent 0.692, or 18.39 per cent.; passengers—per passenger per mile from cents 2.41 to cents 2.21, or 8.30 per cent.; notwithstanding this, the increase in volume of traffic (26 per cent. of total freight tonnage, and 5 per cent. of total passengers carried) has resulted, with the close economy that has been used, in an increase of net earnings sufficient to yield dividends amounting to 5½ per cent., an improvement of 1½ per cent. over the previous year. In order to fully appreciate the success of the year, and the value of the property, it is just to state that the above results have been reached after charging to operating expenses an unusually large amount for improvements and renewals, as shown by the General Manager's report, folio 9 (a very considerable portion of which might with propriety have been charged to construction account), with an increase in the per cent. of expenses to earnings of only forty-two hundredths of one per cent.

"It is estimated that the accident in October last, at Jackson Junction, mentioned in the General Manager's report, will cost the company in settlement of claims and repairs of property, say \$125,000, of which \$60,000 has been paid and is included in this report.

#### FINANCIAL RESULT.

"The result of the business for the year, and also its comparison with that of the previous year, are fully shown in the following table:

		1879.	1878.
Gross Revenue .....		\$7,415,428.80	\$6,091,758.93
Operating exps. ....	\$4,699,502.43		\$4,367,238.81
Construction account .....	10,000.00		134,162.92
Interest & rental .....	1,587,782.00		1,615,950.00
Guar'nt'd interest .....	33,920.00	6,331,294.43	33,920.00
			6,151,271.73
Net revenue .....		\$1,084,134.43	\$840,487.30
Dividends .....	5½ per cent.	1,030,601.22	4 per cent.
			740,528.16
Cash surplus .....		\$53,533.21	\$90,950.04



not be safe to assume that all the remaining lands can be sold as well; a large part of them, however, are as good as any sold, and will bring a better price; they embrace not only much very valuable pine, but a large amount of choice farming lands. With prudent management and the road completed to the Straits, very satisfactory results may be expected.

In view of the great increase in freight traffic, the General Manager, earnestly recommends the extension of the second track for the 46 miles from Ypsilanti west to Jackson, and from Kensington, Ill. (14 miles south of Chicago), southeast 31 miles to Porter, Ind., especially the former. This, with the Air Line, would give the road a double track the whole length of the Main Line.

#### Lake Shore & Michigan Southern.

This company's mileage for the year 1879 was as follows:

Main line, Buffalo to Chicago.....	540.49
Branches owned.....	324.38
Branches owned, but nominally under separate organization.....	160.07
Total owned.....	1,024.94
Roads worked under lease.....	152.73
Total road worked.....	1,177.67
Second track.....	235.70
Side-tracks.....	468.72

Total mileage of track..... 1,882.18

There is a trifling change (0.87 mile) from the mileage of road worked reported for 1878; this is due to a careful re-measurement of track made last year.

There are 495 engines, of which 454 burn coal and 41 wood; 113 passenger engines are equipped with the Westinghouse air-brake, 55 of them having the driver brake also, and 48 freight engines are provided with steam driving-wheel brakes. The car equipment consists of 99 first-class passenger, 35 second-class and smoking, 12 smoker and baggage, 21 emigrant, 23 postal, 48 baggage and 10 baggage and mail cars; 5,871 box, 1,321 stock, 292 oil, 1,517 platform, 1,532 coal and 256 caboose cars; 2 paymaster's, 9 derrick and 148 dump cars. Freight equipment shows an increase of 603 box, 135 coal and 13 caboose cars, and a decrease of 9 stock and 166 platform cars. In passenger equipment there are considerable changes, apparently due to a reclassification of cars.

The general account, condensed, is as follows:

Stock, guaranteed 10 per cent.....	\$553,500.00
Stock common.....	49,466,500.00
Total stock (\$48,791 per mile).....	\$50,000,000.00
Lake Shore & Mich. South. bonds.....	\$35,915,000
Detroit, Monroe & Toledo bonds.....	924,000
White Pigeon & Kalamazoo bonds.....	600,000
December liabilities paid in January.....	37,439,000.00
Dividend paid Feb. 1, 1880.....	540,546.13
Income or profit and loss account.....	3,078,561.83
Total.....	\$93,063,442.98
Road (\$97.182 per mile).....	\$98,897,000.00
Equipment (\$14.927 per mile).....	14,378,000.00
Jamestown & Franklin stock, bonds and advances.....	1,877,879.42
Chicago & Canada Southern stock and bonds.....	600,000.00
Stocks owned.....	1,580,499.82
Bonds owned.....	1,492,005.00
Pacific Hotel Co., Chicago.....	415,712.50
Cash.....	2,477,133.67
Uncollected earnings (collected since Jan. 1).....	397,379.04
General office property and other real estate.....	225,379.47
Supplies, fuel, etc.....	758,857.06
Total.....	\$93,063,442.98

The bonded debt increased \$415,000, as explained below; it is now \$98,526 per mile. Stocks owned include \$267,937.50 Lake Shore & Michigan Southern; \$414,100 Detroit, Monroe & Toledo; \$400,000 Chicago Union Stock Yard; \$70,926.28 Merchants' Dispatch; \$41,971.50 Empire Line (now in liquidation); \$200,000 Pittsburgh & Lake Erie; \$6,000 Grand Haven, and \$171,254.54 capital advanced to cooperative lines. Bonds owned include \$437,000 Cincinnati, Watoush & Michigan; \$400,000 Lake Shore & Tuscarawas Valley; \$268,625 Mahoning Coal Railroad; \$136,180 Grand Rapids, Newaygo & Lake Shore; \$52,200 White Pigeon & Kalamazoo; \$24,000 Holiday Coal Company, and \$144,000 Cleveland, Tuscarawas Valley & Wheeling bonds. Both stocks and bonds are charged at their cost, not their par value.

The traffic for the year was as follows:

Train mileage:	1879.	1878.	Inc. or Dec.	P. c.
Passenger.....	2,234,304	2,296,194	D.	61,890 2.7
Freight.....	7,506,016	9,470,848	I.	1,965,168 16.0
Service.....	310,077	300,082	I.	9,995 3.3
Switching.....	2,915,878	2,542,246	I.	373,632 14.7
Total.....	12,966,275	11,609,370	I.	1,356,905 11.7
Passengers carried.....	9,822,121	2,746,032	I.	76,089 2.8
Passenger mileage, through.....	32,040,300	39,305,880	I.	2,334,420 7.7
Passenger mileage, local.....	108,522,017	103,306,141	I.	5,125,876 5.0
Total.....	141,162,317	133,702,021	I.	7,460,296 5.6
Tons freight carried.....	7,541,294	6,008,445	I.	1,442,849 23.7
Tonnage mileage, east-bound.....	1,197,135,107	965,021,834	I.	202,113,273 20.3
Tonnage mileage, west-bound.....	596,288,333	345,445,992	I.	190,842,341 55.2
Total.....	1,793,423,440	1,340,467,826	I.	392,955,614 29.3
Av. train load:				
Passengers, No.....	63.18	58.14	I.	5.04 8.7
Freight, tons.....	290.94	207.16	I.	23.78 11.5
Earn. per train mile:				
Passenger gross.....	172.63 cts.	171.19 cts.	I.	1.44 cts. 1.8
Passenger, net.....	81.63 "	86.19 "	D.	4.56 " 5.3
Freight, gross.....	153.89 "	155.21 "	D.	1.32 " 0.9
Freight, net.....	61.90 "	53.71 "	I.	8.28 " 15.4

The tonnage-mileage of company or non-paying freight was 46,079,300, carried at a cost of 0.398 cent per ton per mile. The total cost of locomotive service per mile run was: Passenger, 16.57 cents; freight, 19.05; service, 14.74 cents; switching, 12.01 cents; average of all, 16.93 cents. The average mileage run per engine was 26,195 miles.

Per passenger per mile:	1879.	1878.	Decrease.	P. c.
Through.....	1.786 cts.	1.918 cts.	0.132 cts.	6.9
Local.....	2.354 "	2.395 "	0.041 "	1.7
Average.....	2.223 "	2.287 "	0.064 "	2.8
Per ton per mile:				
East-bound.....	0.597 "	0.672 "	0.075 "	11.2
West-bound.....	0.741 "	0.913 "	0.172 "	18.6
Average.....	0.642 "	0.734 "	0.092 "	12.5

The large increase in west-bound freight and the decrease in rates thereon are notable. The decrease in the average freight rate is equivalent to a loss of about \$1,600,000.

The Auditor's detailed statement of earnings and expenses is as follows:

Earnings.	P. c.	1879.	P. c.	1878.
From freight.....	73.92	\$11,288,260.62	71.86	\$10,048,951.78
" passengers.....	20.55	3,138,003.59	21.87	3,057,392.73
" express.....	1.33	201,695.05	1.88	262,618.30
" mails.....	3.39	517,446.16	3.61	503,765.29
" rents.....	0.44	70,207.68	0.40	56,241.70
" all other sources.....	0.37	55,878.77	0.36	50,796.62
Total.....	100.00	\$15,271,492.47	100.00	\$13,979,766.42

Expenses.	Per ct. of earnings.	1879.	Per ct. of earnings.	1878.
General office expenses.....	1.52	\$232,475.71	1.63	\$227,001.82
Conductors and trainmen.....	4.03	615,964.70	3.97	555,092.70
Engineers and firemen.....	4.50	700,937.40	4.55	636,297.50
Agents and station labor.....	11.44	1,747,631.83	11.66	1,629,700.05
Telegraph repairs and supplies.....	0.13	19,927.33	0.12	16,331.66
Gaslight account.....	0.18	27,843.91	0.20	26,396.47
Repairs engines.....	3.61	550,018.37	3.81	531,275.06
Repairs cars.....	4.29	654,509.28	4.83	675,369.52

Expenses.	Per ct. of earnings.	1879.	Per ct. of earnings.	1878.
Repairs roadway and track.....	7.08	1,173,466.59	7.41	1,036,043.07
Rail account.....	1.94	295,004.86	2.00	279,003.66
Repairs bridges.....	0.94	144,173.05	1.26	178,018.66
Repairs fences.....	0.16	24,395.29	0.13	19,351.23
Repairs buildings.....	1.14	173,643.52	1.28	179,988.16
Fuel consumed.....	5.71	870,733.00	6.91	967,197.56
Oil and tallow.....	0.50	76,388.00	0.67	93,834.55
Waste and rag.....	0.06	10,056.53	0.06	12,138.24
Office, train and station supplies.....	0.80	121,703.96	0.97	135,371.03
Damage and loss—freight and baggage.....	0.15	23,333.73	0.22	31,437.06
Damage to property and cattle killed.....	0.05	7,808.26	0.08	10,693.08
Personal injuries.....	0.26	40,053.57	0.27	38,024.01
Law expenses.....	0.33	50,935.25	0.39	55,298.97
New York office.....	0.00	13,491.49	0.10	13,986.04
Rents payable.....	0.49	74,224.77	0.52	71,988.11
Outside agencies and advertising.....	1.10	167,497.52	1.51	210,957.92
Contingencies.....	0.05	8,034.01	0.07	9,469.03
Hire of cars.....	4.31	658,962.61	2.72	380,009.24

Total operating expenses.....	55.64	\$8,497,407.55	57.37	\$8,020,265.30
Taxes.....	2.86	437,116.87	3.33	460,335.57
Total operating expenses and taxes.....	58.50	\$8,934,524.42	60.70	\$8,480,600.87
Net earnings.....	41.50	\$6,336,968.05	39.30	\$5,493,165.55

The income account was as follows, condensed:

Net earnings.....	\$6,336,968.05
Interest and dividends on assets.....	172,806.28
Total.....	\$6,509,774.33
Interest on funded debt.....	\$2,616,955.00
Rentals of leased roads.....	257,489.26
Dividends on guaranteed stock.....	53,350.00
Dividends on common stock—Aug. 1, 1879, 2 1/2, & Feb. 1, 1880, 4 per cent.....	3,315,322.50
Ashtabula accident.....	60,128.00
Surplus for the year.....	\$306,529.48
Amount at credit of income, Jan. 1, 1879.....	\$3,245,132.37
Less worthless assets written off.....	473,100.00
Total.....	\$2,772,032.37

Amount at credit, Jan. 1, 1880..... \$3,078,561.85

President Vanderbilt's report says: "This company owns 1,024.94 miles (although 160.07 miles are embraced in three other organizations) and leases 152.73 miles. Of the 540.49 miles of main line 395.79 are double-track, making the main line equal to 776.28 miles of single track; and two branches—293.78 miles—are so situated that they, with the main line, form a double line of road between Cleveland, O., and Elkhart, Ind., 101 miles east of Chicago, making together 980.06 miles of track, all laid with steel rails. There are also some miles of steel rails in two branches, making in all 1,082 miles of track laid with steel rails.

"Construction and equipment accounts remain unchanged. Nothing was charged to them in 1879, notwithstanding an outlay of about \$150,000 for items fairly chargeable to construction, and \$300,000 paid for 700 new box-cars. Of this amount \$138,915 was derived from the premium on \$889,000 first consolidated mortgage bonds, sold to pay off a like amount of bonds (Cleveland, Painesville & Ashtabula), which matured Jan. 1, 1880. This item is not included in the earnings on the one hand or the expenses on the other, but was applied directly to the payment for cars as stated. With this exception all outlays for improvements are included in the operating expenses.

"The first mortgage debt of the company was diminished from \$23,000,000 to \$22,750,000 by the regular contribution of \$250,000 to the sinking fund, which now amounts to \$2,250,000 first-mortgage bonds purchased and canceled. "The second mortgage debt was increased \$665,000, which represents the cost of \$1,732,500 first-mortgage bonds, and \$1,384,700 of the capital stock of the Chicago & Canada Southern Railway Company. This purchase gives this company the control of that company's road. It extends from the Detroit River, at Grosse Ile, to Fayette, O., a distance of 67 miles. From Fayette to Butler, an important station on our Air Line, and the eastern terminus of the Eel River Railroad, a distance of only about 35 miles, the road is graded, and this company was not only benefited with the completion and opening of this road to Butler, but possibly its ultimate extension to Chicago as originally intended. As the opportunity occurred to obtain the virtual ownership of this road at the low cost of \$10,000 per mile, it was deemed good policy by the board of directors to accept it. This company has operated that road since Nov. 10, 1879, as agent for the Chicago & Canada Southern Railway Company, hence the earnings and expenses of that road are not included in this report. It is proper to state, however, that the earnings thus far, in the winter season, are somewhat in excess of the cost of operating."

Earnings.	1879.	1878.	Inc. or Dec.	P. c.
Gross earnings.....	\$15,271,492	\$13,979,766	I.	\$1,291,726 9.2
Expenses.....	8,934,524	8,480,601	I.	447,923 5.3
Net earnings.....	\$6,336,968	\$5,493,165	I.	\$843,803 15.4
Gross earn. per mile.....	12.975	11.877	I.	1.098 9.2
Net.....	5.384	4.867	I.	.517 10.6
Per cent of exp.....	58.50	60.70	D.	2.20 3.6

Disposition of net earnings:				
Interest, dividends on guaranteed stock and rentals, less interest received on assets.....	\$2,754,087.98			
Contribution to sinking fund.....	250,000.00			
Ashtabula accident settlements.....	60,128.00			
Dividends, 6 1/2 per cent.....	3,215,322.50			
Unexpended balance.....	56,529.48			
Total.....	\$6,336,968.05			

"The Ashtabula claims are now all settled, with one unimportant exception.

"The amount earned for each share (\$100) of the capital stock, after the payment of prior fixed charges, was \$7.24, against \$5.61 in 1878, and \$3.57 in 1877.

"The financial results of the ten years since consolidation are shown by the following condensed table:

Year.	Miles.	Gross earnings.	Operating expenses.	Amount.	Per cent.
1870.....	1,013	\$13,509,236	\$8,368,821	61.95	
1871.....	1,074	14,808,449	9,779,806	65.64	
1872.....	1,136	17,689,935	11,839,526	66.90	
1873.....	1,175	19,414,509	13,746,598	70.90	
1874.....	1,175	17,146,131	11,152,371	65.04	
1875.....	1,175	14,434,199	10,531,501	72.96	
1876.....	1,177	13,949,177	9,574,836	68.64	
1877.....	1,177	13,505,159	8,963,986	66.37	
1878.....	1,177	13,979,766	8,480,601	60.70	
1879.....	1,177	15,271,492	8,934,524	58.50	
Average 10 years.....	1,145	15,380,805	10,137,855	65.91	

Year.	Net earnings.	Interest, leases and dividends guaranteed stock.	Dividends.	Amount.	Per cent.
1870.....	\$5,140,415	\$1,828,897	\$2,752,360	8	
1871.....	5,118,643	2,121,164	2,874,355	8	
1872.....	5,860,409	2,201,459	3,466,096	8	
1873.....	5,667,911	2,654,560	1,978,040	4	
1874.....	5,963,760	3,008,163	1,607,661	3 1/4	
1875.....	3,902,698	2,810,394	989,330	2	
1876.....	4,374,341	2,759,089	1,607,661	3 1/4	
1877.....	4,541,193	2,775,657	986,330	2	
1878.....	5,493,165	2,718,792	1,978,040	4	
1879.....	6,336,968	2,754,988	3,215,322	6 1/2	
Average 10 years.....	5,242,950	2,563,399	2,145,881	4.9	

"It will be observed that the net earnings in 1879 were the largest in the history of the road, notwithstanding the snow blockade lasting through January and February, followed by a bitter railroad war in May and June, during which rates dropped to figures which were unprecedented.

"The following condensed tables show the freight and passenger business for the entire ten years—1870-1879:

Year.	Tons.	Tons, One Mile.	Receipt per ton per mile.	Cost per ton per mile.	Profit per ton per mile.
1870.....	2,978,725	574,935,571	1.504	.932	.572
1871.....	3,784,525	733,070,696	1.391	.913	.478
1872.....	4,443,092	924,844,140	1.374	.920	.454
1873.....	5,176,661	1,053,927,189	1.335	.946	.389
1874.....	5,321,267	999,342,081	1.180	.767	.413
1875.....	5,022,460	943,236,161	1.010	.707	.303
1876.....	5,835,167	1,133,834,828	.817	.561	.256
1877.....	5,513,398	1,080,005,561	.864	.573	.291
1878.....	6,008,445	1,340,467,821	.734	.474	.260
1879.....	7,541,294	1,733,423,440	.642	.398	.244

PASSENGERS.					
YEAR.	Number passengers carried.	Passengers One Mile.	Receipt per passenger per mile.	Cost per passenger per mile.	Profit per passenger per mile.
			Cents.	Cent.	Cent.
1870...	2,065,440	160,500,114	2.612	1.618	.994
1871...	2,046,428	142,684,243	2.608	1.843	.965
1872...	2,212,754	162,308,495	2.569	1.759	.860
1873...	2,845,163	179,363,173	2.542	1.802	.740
1874...	3,006,363	173,234,672	2.452	1.595	.857
1875...	3,170,234	164,950,861	2.378	1.735	.643
1876...	3,119,923	175,510,501	2.090	1.438	.652
1877...	2,742,295	138,116,618	1.877	1.539	.780
1878...	2,746,032	133,702,621	2.287	1.166	1.121
1879...	2,822,121	141,102,317	2.223	1.448	.775